JANUARY, 1927

# Electrical West

With which is consolidated the Journal of Electricity

A McGraw-Hill Publication

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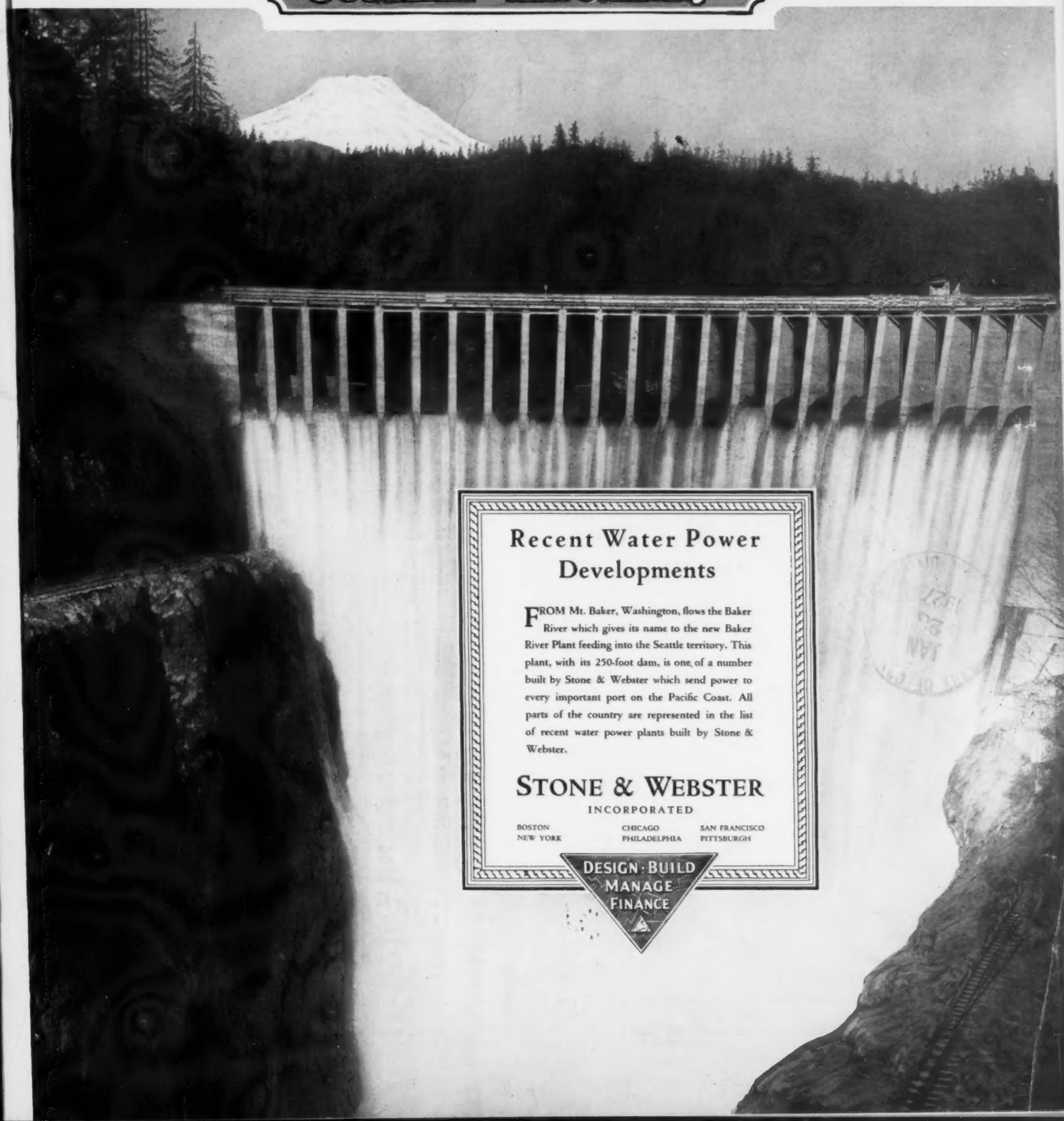

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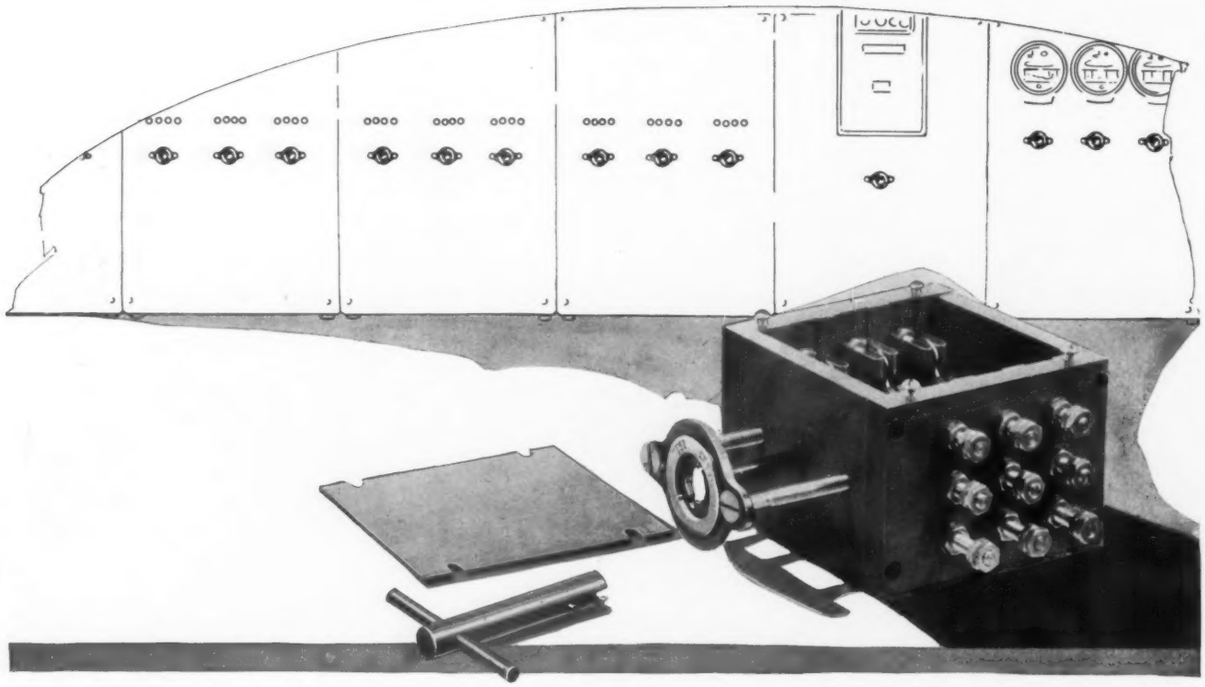

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Electrical West entered as second class matter, at the post office at San Francisco, under the Act of Congress, March 3, 1879.
Published monthly at 883 Mission Street, San Francisco, California.

Volume 58 San Francisco, January, 1927 No. 1

# Electrical West

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power & Gas," and the "Journal of Electricity"

C. T. HUTCHINSON, *Editorial Director*
W. A. CYR, *Associate Editor*
G. R. HENNINGER, *Associate Editor*

A McGraw-Hill Publication
Published Monthly
Established 1887

G. C. TENNEY, *Managing Editor*
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B. H. SNOW, *Northwest Editor*

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## *Annual Review Number*

ELECTRICAL WEST will present an unusually complete statistical review of the industry in its February issue. A series of statistical articles and tables will review the progress of the industry in the eleven Western states during 1926. One of the features will be the tables covering hyroelectric, steam and transmission line construction, which have become an annual service of this publication. Projects completed during the year, under construction at the present time or projected for the near future will be covered in detail. In addition there will be a review of the commercial progress of the central stations in this territory, together with a summary of plans for 1927. An addtional feature will be a number of interviews with leaders in the industry dealing with pertinent problems. From cover to cover this issue will present a graphic picture of the development of the electrical industry. It goes without saying that the data presented will be of great value to those interested in electrical progress either from an engineering or a commercial standpoint.

**McGRAW-HILL COMPANY OF CALIFORNIA—883 Mission St.—SAN FRANCISCO**
**Northwest Office: 1206 Spalding Building, Portland, Ore.**
**Publishers of ELECTRICAL WEST**

JAMES H. McGRAW, Chairman of the Board — C. T. HUTCHINSON, President — EDGAR KOBAK, Vice-President — ROY N. PHELAN, Secretary & Treas.

WASHINGTON, Colorado Building
CHICAGO, 7 South Dearborn Street
PHILADELPHIA, 1600 Arch St.
CLEVELAND, 401 Guardian Building
ST. LOUIS, Star Building
NEW YORK, 285 Madison Ave.

Subscription rates in United States, Canada, Mexico, Porto Rico, U. S. Possessions, Argentina, Bolivia, Brazil, Columbia, Costa Rica, Cuba, Dominican Republic, Ecuador, Nicaragua, Panama, Guatemala, Paraguay, Peru, Honduras, Salvador, Uruguay, and Spain, $2.00 per year, 2 years $3.00. Elsewhere $3.00 Gold (13 Shillings). Single copy, 25c. When change of address is required, both old and new addresses must be given. Notice must be received two weeks before change takes place.

**McGRAW-HILL PUBLISHING COMPANY, Inc.**
**New York**
Publishers of
American Machinist—European Edition
(*Published in London*)
Industrial Engineer
Electrical Merchandising
Chemical and Metallurgical Engineering
American Machinist — Successful Construction Methods
Electrical World — Electric Railway Journal
Engineering and Mining Journal
Bus Transportation — Engineering News-Record
Coal Age — Radio Retailing — Power

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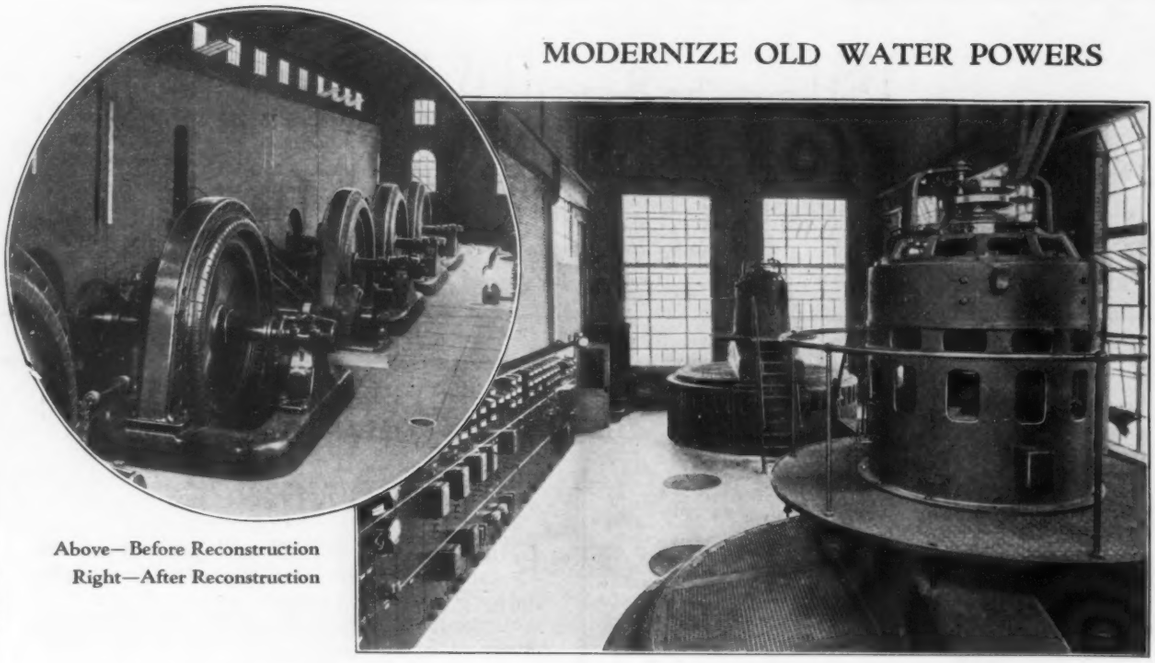
By McGraw-Hill Company of California

Entered as second-class matter Feb. 17, 1921, at the Post Office at San Francisco, California, under Act of March 3, 1879.

Member Audit Bureau of Circulations
Member A. B. P.
Printed in U. S. A.

## MODERNIZE OLD WATER POWERS



Above—Before Reconstruction
Right—After Reconstruction

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# Electrical West

With which is consolidated the Journal of Electricity

C. T. HUTCHINSON
*Editorial Director*

A McGRAW-HILL PUBLICATION

G. C. TENNEY
*Managing Editor*

Volume 58 | San Francisco, January, 1927 | No. 1


# *A New Name and a New Year*

WITH this issue Electrical West makes its initial appearance before 6,000 readers in the eleven Western states, and in keeping with the spirit of the times has been thoroughly modernized in every particular.

THE name, Electrical West, presents a happy solution of a real publishing problem in that it offers in two words a clear indication of the character and geographical field of the paper. Publication monthly gives a better opportunity to the editors for study and discrimination in the selection and preparation of material and will result in a more careful reading of the text as a natural consequence.

THE enlarged departments are more valuable to those readers whose work is along specialized lines, while the greater news section presenting a monthly digest of the happenings in the industry gathered by special correspondents in the field will keep every reader in initimate touch with electrical progress.

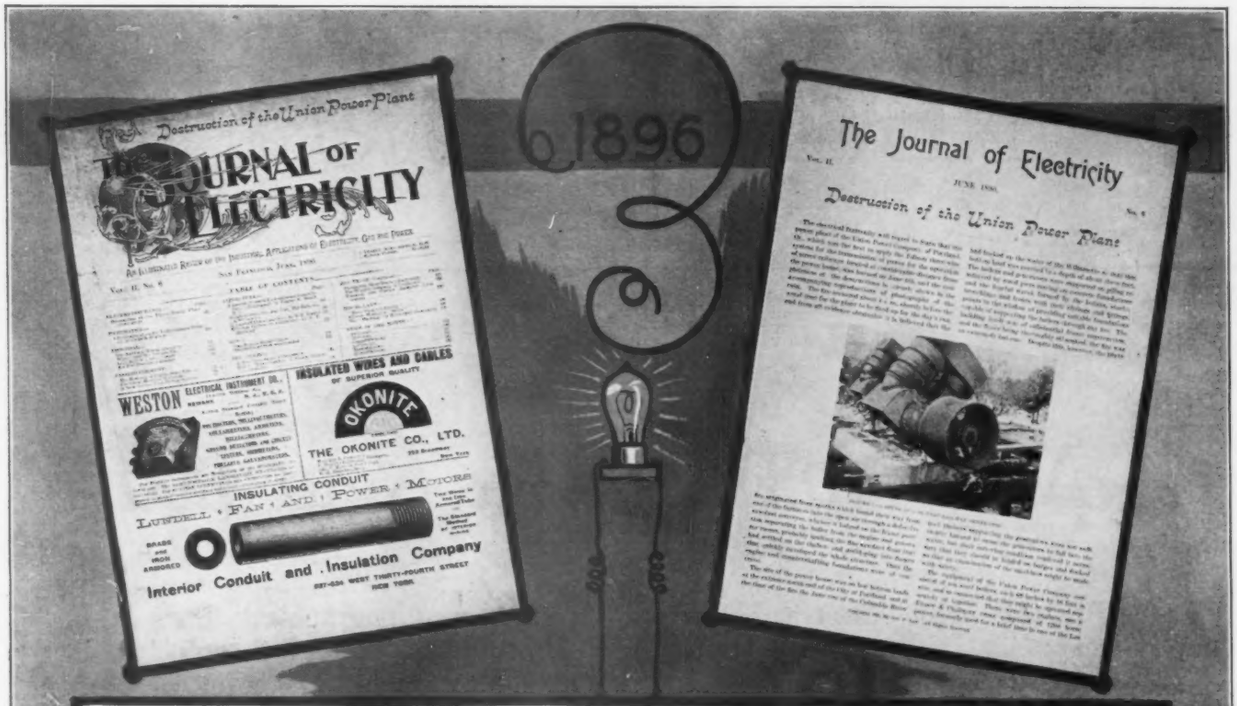
THE new typographical dress is in keeping with the best thought in publishing, and presents the result of many years' experience in the determination of size of type face, spacing and width of line that can be read with the least eye-strain.

IN keeping with the usual practice, the old name, Journal of Electricity, will be carried on the masthead with the new title, Electrical West, until such time as Electrical West shall have become so impressed upon the consciousness of our readers as to make further repetition of Journal of Electricity unnecessary.

THUS Electrical West on this first day of January, 1927, desires to emphasize anew its faith in the greatness of the electrical industry in the West, and to pledge itself toward a constant betterment of service to the men whom it is privileged to serve.

A happy and prosperous New Year to you all.

*The Staff of Electrical West.*


1896
Destruction of the Union Power Plant
THE JOURNAL OF ELECTRICITY
WESTON ELECTRICAL INSTRUMENT CO.
INSULATED WIRES AND CABLES
OKONITE
THE OKONITE CO., LTD.
INSULATING CONDUIT
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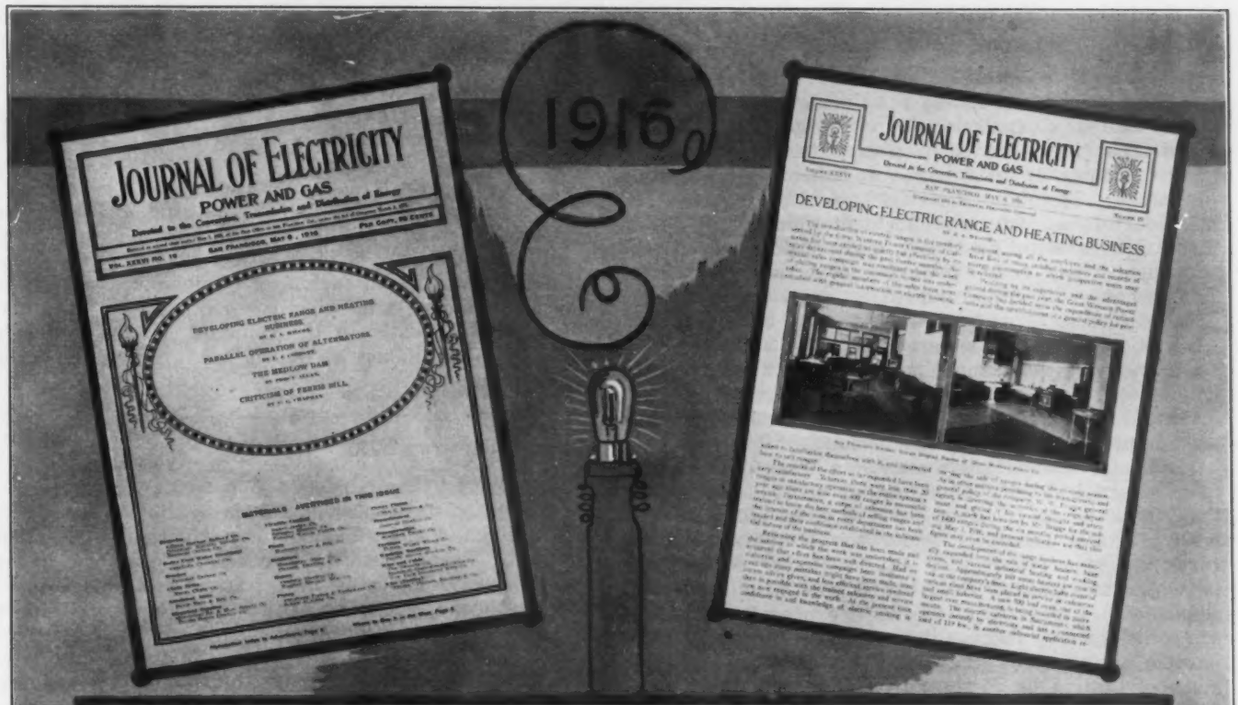
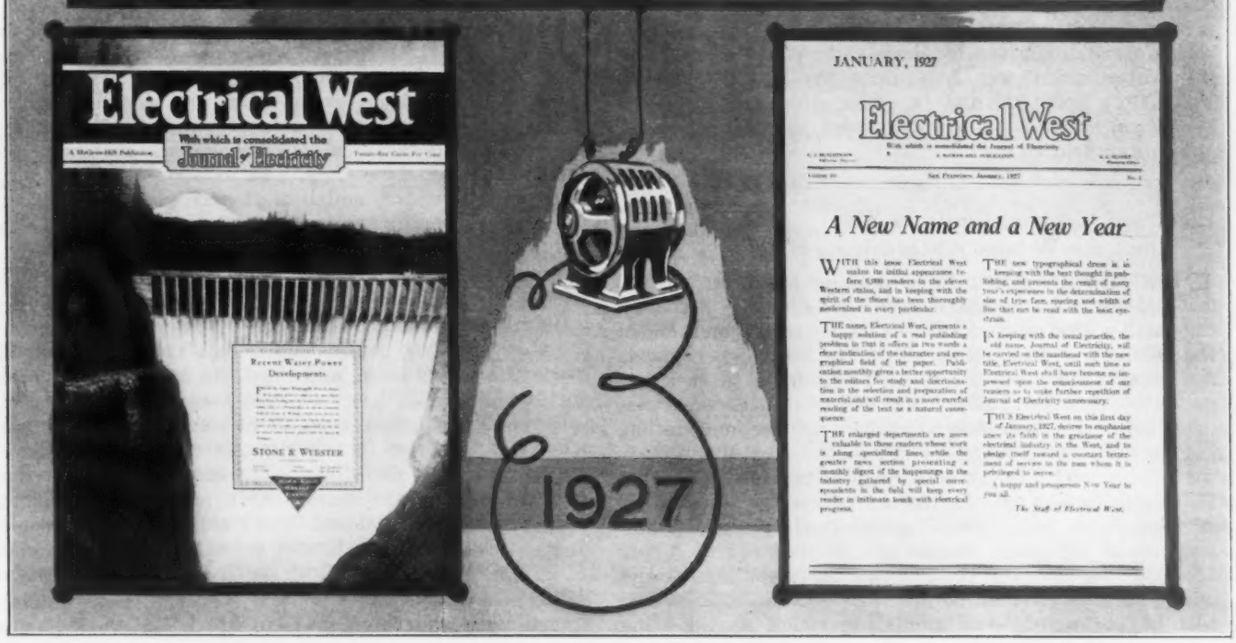
The Journal of Electricity
Destruction of the Union Power Plant

# Electrical West and Its Progenitors

ON THIS and the adjacent page is shown the evolution of an idea. The Journal of Electricity of 1896, viewed from the standpoint of present-day publishing standards, was a curious specimen of typography. The half-tone had just begun to supersede the woodcut, and it was used in illustrating the quaint-looking generator shown under the title, "Destruction of the Union Power Plant." By 1906 progress in design was marked, as comparison of the two generators indicates. Note the trend toward simplification of title lettering, the ornate "Journal of Electricity" of 1896 compared to the more severe presentation of the "Journal of Electricity, Power and Gas" of a period ten years later. Even more marked was the improvement in editorial service and each succeeding year saw the Journal branch into wider fields, the better to serve its increasing family of readers.




EVIDENTLY front-cover advertising had a lapse, for the issue of 1916 shows indices of both editorial and advertising contents in this choice position. But the editorial page illustrated has greater interest, for it heralds the beginning of the development of the electric range and heating business, a business, by the way, that still is developing and probably will be for some time. It is worthy of note also that so many old friends have maintained continuity in their advertising since 1896. General Electric, Westinghouse, Allis-Chalmers, Okonite, Weston, and a host of others too numerous to mention have used the selling section of the Journal of Electricity for nearly two score years. Electrical West, typographically and in every other respect, embodies the experience of more than a generation. While there is justification for a feeling of pride in the fact that thirty-nine years of experience is the foundation upon which the Electrical West of today is built, nevertheless there is, beyond that feeling of pride, a determination to strive constantly for a continuous betterment with each succeeding issue of the magazine.



## A Reciprocal Obligation to the Insurance Companies

ANOTHER monopolistic invasion of the realm of business has been proposed for California. The Industrial Accident Commission in its annual report recommends that the state compensation insurance fund be given a monopoly in writing workmen's compensation insurance. To quote directly from the report, "The members of the Industrial Accident Commission are in direct accord with the great majority of our citizens who hold that, under ordinary conditions, the state should not enter into competition with private enterprise; that such activity should only be encouraged when it shall become apparent that the state can perform a service that cannot be performed at all, or with only meagerly comparable results, by private enterprise and then only when some social, industrial or public need of paramount importance demands it."

If the statement of the commission is accepted as true, then an analysis of the situation proves conclusively that there is no occasion for the establishment of a beaureaucratic monopoly under the compensation law. Insurance men report that almost 70 per cent of the present compensation insurance is carried with private companies. Certainly if the service provided by these companies were inadequate, or only "meagerly comparable" to that of the state, agitation for a state monopoly would be forthcoming from employers, or at least the state fund would receive a greater patronage. No less an organization than the California Industrial Council, comprising about eighty concerns, has adopted a resolution condemning the suggestion. Insurance men further state that the lively competition that exists at the present time for this type of insurance is in large measure responsible for such patronage as has been given to the state fund. Elimination of this competition by establishing a state monopoly undoubtedly would bring about the usual ills that accompany a bureaucracy —laxity, arrogance, inefficiency and greater facilities for political machination.

The electrical industry has learned by experience to oppose governmental participation in business as a principle. If the suggestion of the Industrial Accident Commission were brought to a test, the industry would find itself allied with the insurance companies not only because they are among the largest holders of public utility securities but further, it could not forget the active assistance given by these same companies during the Water and Power Act campaigns in California in 1922, 1924 and 1926 and in every other section where a political subdivision has attempted to enter the light and power field.

## Electrical Cooking Finds its Way into the Woman's Magazine

ELECTRICAL heating and cooking has been slow to find its place in the woman's magazine. Although the smaller electrical appliances have enjoyed mention in the columns of practically all of the leading periodicals for women time and again, electric cooking as such has not fared so well. Under these circumstances an article upon this subject deserves comment and commendation.

"The Fall Bride Asks, 'Is it Practical for Me to Cook with Electricity?' "—an article appearing in the October Delineator, takes up the matter of electric cooking in an elementary way. For Westerners the strange statement, "Not all power companies are prepared to supply adequate current for cooking during meal hours, and unless such service can be provided, electric cooking had best be postponed,"—an admission which should bring a smile to all lips—is but an indication of the resistance electric cooking must surmount to come into more general acceptance in the East.

Nevertheless, the article by Alice Blinn is an entering wedge into a consideration of the electric range as a practical home appliance. The writer cites the numerous advantages of the electric range, even if she does fear too much its cost of operation.

It is to be hoped, of course, that the article is the precursor of many dealing with this efficient and well-tried appliance which in Western homes has demonstrated its virtues to each user's complete satisfaction. The day yet may come when electric ranges will be discussed as frequently in the columns of the women's magazines and taken as much for granted as other ranges are now.

## Baker Fishway Under Fire

A resolution passed last month in Seattle by the International Pacific Salmon Investigation Federation "strongly disapproves the propaganda" on the Baker River fishway "as being unwarranted and misleading." This resolution, published in full in this issue as a news item, is not altogether surprising. If the fishing interests believe that the publicity given this fishway has "conveyed the impression . . . . that a complete solution has been reached of the problem of safeguarding salmon-runs jeopardized by the construction of dams," then we can well imagine their desire to sound a warning. If such an impression has been conveyed generally, which we doubt, then a warning is perhaps in order, but we do wish that the resolution submitted to us for publication might have been more happily framed, since it is itself somewhat unwarranted and misleading.

The resolution starts with the premise that "a constant and nation-wide propaganda has been maintained in newspapers, engineering and technical magazines" to the effect that the fish-and-dam problem is solved once and for all. This statement is, of course, overdrawn. The word "propaganda" means a doctrine of principle promulgated by an organization, and always implies that there is back of it a driving force, generally inspired by some ulterior or expressed motive. Certainly this was not the case in the publicity given to the Baker fishway experiment. We believe that the publicity on this experiment was inspired by a normal, natural motive—that of satisfying public and technical interest. The newspapers clamored for the story and were given it to insure its publication in accurate and complete form. The trade and technical press had been watching the experiment for some time, and as soon as definite results had been accomplished, it was glad to fulfill its function of keeping the industry abreast of new developments by publishing those results.

Further, the resolution is somewhat misleading. While admitting "the partial success of the experimental fishway at the Baker River dam," it states that "results there are not yet conclusive." This opinion seems unsupported by evidence, and the facts are that the major portion of the 1926 salmon-runs was delivered successfully to the spawning grounds above the dam and great schools of fry from former runs were passed safely over the dam on their way down. The actual figures are that some 12,000 mature salmon were passed up and some 2,000,000 fry were passed down; and with these results in mind, let him who desires draw his own conclusions as to the success of the first year's operations.

We believe that the electrical industry is in complete accord with the third premise of the resolution, that

"the problem connected with each dam is individual and distinct." The Journal of Electricity brought this out clearly in an editorial comment on the Baker experiment in the issue of Sept. 15, 1926. It said therein: "What has been accomplished on Baker River can be accomplished elsewhere. Each problem will be an individual one, but each can be worked out by taking into consideration the nature of the stream and the habits of the fish running in it, and then building suitable devices to meet the conditions and operating the whole to suit the characteristics of the run." We still adhere to that opinion and are ready to join the fishing industry in warning all not to take too much for granted from the Baker experiment. Let no one believe that the fish-and-dam problem can be reduced to an exact equation solvable by the Baker River formula. But let all understand the measure of success secured at Baker River in solving the problem peculiar to that stream, and, from this success, enjoy the hope that the combination of brains of the fishing industry and of the construction engineering departments of the power companies may be able to solve each individual fish-and-dam problem as it arises.

## Increasing the Field of Refrigeration Prospects

NOT as a new and original idea but as an old one worth repeating do we urge again that refrigeration distributors and dealers devote a major portion of the money and energy allotted for promotional purposes to educating the people at large to the advantages of mechanical refrigeration rather than to extolling the merits of the particular machine they are selling.

One of the points brought out by the refrigeration survey conducted by the McGraw-Hill electrical publications was that in certain districts of the West only a small proportion of the people were in a receptive frame of mind toward any refrigeration whatever. This was evidenced in those cities in which an accurate survey of ice users had been made, for surely, where only 35 per cent of the families take ice any portion of the year and only 10 to 12 per cent of those take it the year round, the conclusion must be drawn that the community is not sold on the need of refrigeration of any kind. This measurement of the receptivity of the community to refrigeration was borne out by the estimates of the sales executives of central stations interviewed during the McGraw-Hill survey. All of these gentlemen were asked to state what percentage of their domestic customers they considered to be immediate prospects. The answers varied from 10 to 35 per cent, giving an average of about 20 per cent.

Giving due consideration to these measurements, dealers can adopt one of two general policies. Either they can cut each other's throats over the 20 per cent market by worrying that market with promotional material about refrigerants, brine tanks, frost coils, float valves, thermostats, and other mechanical features of competitive makes, or they can systematically set about educating the community in general, with the view to increasing the field of prospects from 20 per cent to 40, 50 or 60 per cent. If they are successful in the latter policy, all will secure greater volume with less effort, and the consequent lowering of overhead will bring its attendant increase in net profit.

In appealing to the man now considered to be outside of the 20 per cent, the advertising of mechanical excellence is useless. That man doesn't care a rap whether one machine has a union where another has a flange, or about any of the other mechanical differences. The question that will have to be answered for him before he will discard his "cold cupboard" in favor of any machine is, "What is mechanical refrigeration and what will it do for my home?" The answer to this logical query is, when properly told, an absorbing story of sanitation and health, of cleanliness, of convenience, of beauty, of pride of ownership, of better standards of living, of the raising of domestic science to a fine art, of hospitality, of the opportunity afforded to the housewife for the expression of her personality through the kind of cheer she sets out for her guests, and of many another material benefit and abstract happiness that may be derived from the possession of this modern kitchen appliance. In short, it is the story of refrigeration service—not the story of a machine having a motor and compressor forcing a noxious gas through copper tubing.

Frequently we hear a clear note sounded above the clamor for commercial supremacy. Such a note has been heard in the news recently telling of the formation of the Electric Refrigeration Trades Association of Portland. Here fifteen dealers and distributors have organized to keep competitive practices on a constructive plane and co-operatively have embarked on an educational program to tell the story of mechanical refrigeration through a series of radio talks. Surely we may expect to hear of the field of prospects in Portland increasing, and, basing our judgment on faith in the soundness and practicality of the plan outlined, we predict prospertity for the association's member firms.

## Industry's New Year Resolution Should Be for Greater Commercial Activity

AS THE New Year dawns, the electrical industry is one year older; it enters upon the forty-third year of its varied career. Generally speaking a man of forty-three long since has passed maturity and rapidly is approaching his prime, but a review of the life of the utilities would indicate that they are approaching only adolescence, hardly conscious of the growth that is to come.

Yet there are those who would have us believe that the electric light and power companies already have reached maturity and are ready to settle down to a career of steady and unspectacular growth characteristic of the older and more firmly established order. Retrospection and review tend to show that the opposite is true. Slightly more than 50 per cent of the homes in the United States are wired and in them the degree of electrification is little more than ten per cent. Industry has been quicker to adopt electric power, and recent estimates state that only 40 per cent of American industry is using other than electrical power. When the central stations can list every home and every major industrial plant among their consumers, then perhaps maturity will have been reached and the future will depend solely upon natural growth. In the past the utilities have been occupied with engineering and mechanical improvements, the development of an adequate supply of power, the solution of public relations problems and the accumulation of capital. These problems have been solved to a great extent and at present the groundwork has been laid for intensive cultivation of the market, both through the extension of service to those homes, communities and industries not now served, and through increasing the use of electricity in those homes and industries already connected to the lines.

Thus, as 1926 passes, the New Year's resolution of the electrical industry would seem to be that it devote its efforts to commercial progress so that the service electricity renders may be available in more homes and more industries and to a greater extent than ever before.

Season's Greetings to the Electrical Industry

# Four Fundamentals of Merchandising

## Whether of Kilowatt-hours or Anything Else

By Ray W. Turnbull*

Pacific Coast Sales Manager, Edison Electric Appliance Company

IN THE army the new recruit is told that the object of all military drill is to win battles, and likewise any merchandising plan, selling effort or advertising campaign has one object—to get orders. In your business these orders must be for kilowatt-hours because you are in the business of selling kilowatt-hours, but this commodity which you have to sell is something that people cannot see. You cannot show samples, and you cannot directly sell this commodity itself. Therefore, you sell these kilowatt-hours by selling equipment which depends upon electrical current for its operation. This equipment, particularly in the case of household devices, is merchandise, and this means that in order to properly sell kilowatt-hours you must accept and operate your new business department on the fundamental principle of good merchandising.

**SELLING the kilowatt-hour, something which cannot be seen by the purchaser, must be done through the medium of electrical merchandise. Whatever is good merchandising sense, therefore, is good sense in the building of load. In this interesting and human discussion by one of the foremost merchandisers on the Pacific Coast will be found explained in plain language some of the fundamentally sound policies which should underlie any merchandising or selling program, whether of power company or cigar stand.**

One of the great difficulties in discovering opportunities for further sales of electrical current through merchandise lies in the fact that salesmen themselves do not fully appreciate the great possibilities of this business, and in many cases are inclined to feel that they have covered all possible prospects and that the future for them means very hard work because they have taken the easy sales. Such men should have called to their attention the fact that many communities on the Pacific Coast have a saturation of electric ranges of over 50 per cent of the residence meters. Other power companies have as high as 30 per cent saturation on electric ranges over their entire systems. One large power company on the Pacific Coast not only sold 2,700 electric ranges in a two months' campaign, but this year will sell electric ranges to 10 per cent of its residence customers. Such information as this should be given to salesmen who are in your new business department, not to make them feel that they are not doing a good job but to make them see the possibilities that are evidenced by actual accomplishment in some communities.

Electric appliances, as has been stated many times, are not bought by the user because of their recognized need or value, but they must be sold to the consumer because of the convenience to be gained through the service which they render.

This involves the highest type of selling and will need a carefully constructed plan and a particularly high-grade corps of men to get the best results.

There are certain firms doing business all over the United States who are recognized as capable merchandisers of their particular products. You have all seen, at one time or another, one or two men standing on a prominent corner in the city making a check of the number of people passing the corner—particularly the men—the direction in which they are passing, the type of men, whether or not it is a good corner for street car patrons to use, whether it is a rush corner or simply a busy corner. The check which these men make, in many cases for such companies as the United Cigar Stores, gives an idea of the prospects for their business at that point. Perhaps, too, these counters check off the women as well, but in any event, they turn in a picture of prospects which the firm can use as a gage in determining the advisability of operating in that particular field.

Now, if it is decided to open a store at that particular point, this firm makes another survey, this time of their own men, and *they pick the best man they have* in the organization to open this business because it needs a good man to develop a new enterprise.

The merchandising manager of the power company makes a similar survey before he enters the merchandise field in the territory served. To set forth a system which would be successful everywhere would be a difficult matter as each local situation has varying conditions to meet and these must be given consideration. The sales manager will probably make note of the following:

1. Number of residence meters
2. Time of year
3. Type of merchandise
4. Period of sale
5. Selling plan in general
6. The "make ready" or preparatory work
7. Estimated results
8. The personnel

The most important thing is left to the last for a good man will make a fair success with even a poor plan, but the best of plans will fail without the right men to carry them through. Unfortunately, many times when such a plan is made one of our good executives will say: "Now, who shall we get to sell this stuff? I think maybe you had better give Charlie Smith a chance. He has been in the bookkeeping department for twenty-eight years and we would like to get Charlie out in the open. We'll put Charlie out to sell these appliances."

Gentlemen, if the engineering department was operated with men who had as little experience and as little training in engineering matters as Charlie Smith of the bookkeeping department has in merchandising and sell-

* Notes from an address by Mr. Turnbull given before the first conclave of the Commercial Section, Pacific Coast Electrical Association, Santa Cruz, Calif., Nov. 12, 1926.

ing, the power companies could not survive. It is just as necessary that a salesman be of the proper type and have the proper training as it is that the engineers or accountants be picked from men who have ability along those lines.

### Four Merchandising Principles

The public has changed its buying system in the last few years. People are no longer satisfied to accept the word of your company representative that this is the best or that is what they should use merely because you carry it. The public today is made up of discriminating buyers. They want to know the "reasons why," particularly when buying special merchandise, and this is particularly true of women buyers, who, in the main, are our prospects for electrical household equipment. Why, if every woman realized all the advantages of an electric range, for instance, you would have no trouble at all selling them; you just couldn't supply the demand for them. Women seldom, if ever, know the value of the merchandise you are offering. They must be told why the special features of your goods are desirable and they must be told how the service rendered will be of value to them.

In order to properly carry out his function as a sales representative of your company, there are four points which I believe should be considered as vital to the success of any sales organization:

1. Every employee should have a full understanding of his personal responsibility for the company's progress.
2. Every employee should have a definite personal responsibility and the authority to carry it on.
3. Every employee should have a complete knowledge of the goods he is selling.
4. A practical, workable selling plan should be given to each sales representative.

### Personal Responsibility

Without a personal sense of responsibility for the firm's progress your employees will thoughtlessly do things which are anything but beneficial to your company, and without this thought in mind your employees will be careless of matters which are important to your best company interests. How many of your salesmen know what it costs the company to make a sale? How many of them care? Probably the reason is that you have never told them. Take them into your confidence. Show them something of the cost to the company of the work which they are doing. Have them understand that their interest in these matters has a direct relation to their own profit in the work which they are doing, —and then make it true. If they can help you to cut down selling costs, let them share in the benefits. If you do this you will have a sales force that will not only build business but will create goodwill for your company which cannot be secured in any other way.

Let me give you an example of what I mean. I suppose that being a salesman makes me more susceptible to good selling than ordinary mortals, but anyway I like to observe the manner in which other salesmen handle their goods and handle me as their prospect.

### A Matter of One Lemon

One evening not very long ago, after the theatre, a few of us stopped at a fashionable soda fountain in San Francisco to get a cold drink. There were three slick-haired soda mixers draped over the counter, with nothing to do, and one finally tore himself loose and asked us what we wanted. I asked for a lemonade made of the freshly squeezed juice from the extractor on the counter before us.

"We've got some lemon juice here in a pitcher," he said, but I told him I would prefer to have it fresh.

"We squeeze the lemons here at nine o'clock," he said, in none too good humor. "If you want it fresh you can come in then. I won't squeeze a lemon now for anybody."

So I just took a Coca-Cola, and that place lost a good customer. I have never gone there since and I don't think I ever will. If that clerk had any sense of responsibility for the welfare of his firm he might have squeezed one lemon to make a friend for the company.

### Definite Responsibility

There is no system that I know of that will so quickly find the weak spots in your selling organization as to place the responsibility on the individual. Give each man a job to do and give him the authority with which to do it. Then, if it is not done, he alone is responsible and with this knowledge he is going to put forth a greater effort to do his work well.

If you'll pardon another personal reference I'll cite my own experience when I was pulling doorbells for a little power company, some years ago, in Pomona. My job was to locate all the homes in a certain area having no electric meter and to go to those homes and sell them electric service. I had a definite district assigned to me and I was responsible for that district. It was *my* district and nobody's else. If that district did not show the results that it ought to there was nobody to blame for it but me. I could not pass the buck to the sales-manager because it was given to me and I had full responsibility and authority in that district.

Without apportioning the work to be done in a definite manner you will find the organization is riding a weak man on the backs of strong men, and this excess load for the good workers is not only unfair to the company but it affects the men's spirit if they feel that they are being called upon to carry more than their share. Specific territories allotted to each man; quotas given for special work based on territorial opportunities and productivity allows the sales manager to watch his salesmen's work. It lets him give help where help is needed, enables him to weed out a weak man in your organization and give proper compensation to the real producers.

### Knowledge of the Goods

This question of knowing your goods has probably received more comment and called for more conversation than any other one thing in the salesman's manual, but the surprising part of it all is that men are still called salesmen who not only do not know what they should about their merchandise but in many cases they actually do not believe it—still they are called "salesmen" and try to operate as such.

I don't know of any material that is eaiser to sell than electrical appliances if you can get your people to know how good the devices are. The trouble is that most selling of appliances is done in such a way that the consumer who buys an appliance doesn't discover half of the good points of it until he has been using it for six months or more.

It has been mentioned before that the successful selling of electric household appliances depends on the salesman's ability to have his prospect appreciate the value of the service to be rendered by his merchandise, and if this is to be done every possible convenience feature and the value of every form of service to be given should be so thoroughly known and appreciated by the salesman that he can tell it in a manner which leaves no doubt in the mind of his prospect.

This can best be done if the salesman will discuss the value of his merchandise in a "use it" atmosphere. Many salesmen are making the mistake of promoting reasons why the prospect should buy rather than giving information regarding the value of the goods in service, but it is the service rendered which the prospect is buying rather than the goods themselves and it is this new and convenient service which will get the interest of your customers in electric merchandise.

The salesman must not only be informed but he must be an enthusiastic believer and should be thoroughly conversant with the benefits to be derived from the service of anything your company has to sell.

### Razor Blades and a True Salesman

If you will pardon still another personal reference I will given you an example to illustrate this. I went into an Owl Drug Store, at the corner of Third and Market Streets, San Francisco, a few weeks ago to buy a small package of Gillette safety razor blades. The salesman at the counter first said, "Good Evening" in a pleasant manner, and after returning his greeting, I told him what I wanted. He quickly reached under the counter and came up with two packages of blades and proceeded to tell me that there was a saving in buying a larger package than I had asked for. That was something I did not know and I mentioned that I probably would need the larger package because the blades did not seem to last very long. That gave him a sales idea. (He was a salesman.) "Have you ever used the Twinplex stropper?" he said, and immediately produced one, opened a package of blades and showed me how it was used. He then told me that he had used one of these stroppers himself for four years and at the present time had a blade which he had used for 210 days. He was so interested he was keeping a record of it, and the definite figures which he quoted to me convinced me that he knew what he was talking about. I then questioned the price of this item, which I understood was $5, and he told me one was now available in a different finish at a much lower price.

Without going into further detail, before leaving that store he had sold me $5.40 worth of goods when I had entered intending to buy a 43c. package of razor blades.

### The Sequel to the Incident

Now, that isn't all because I want to tell you something about Twinplex stroppers. If any of you gentlemen are shaving with Gillette razors and do not use a Twinplex stropper, by all means get one. They are well worth the money which you pay and I can heartily recommend them.

Now, get this, gentlemen. That man not only sold me a stropper but he sold me so well that I am out selling stroppers. And your salesmen should sell your goods so well that every one of your customers should be a sales agent also for your goods and your company. That is what enthusiastic belief does in a sales department.

Use the manufacturers' representatives to help your salesmen gain a better knowledge of the goods which you carry. Dont let a factory representative or any one who sells you the goods get away from your office without getting all the information which he has about his goods for your own salesmen. He has a specialized knowledge of his product and you should make him give the benefit of his knowledge to your sales force in order that they may be better equipped to use the features of these goods in building further interest among your customers.

### An Organized Plan

Any of us who have been in the sales department for any length of time, if we are honest, will remember many times when we started out in the morning with no plan for what we are going to do that day. How many of your salesmen go out of the door in the morning and flip a coin to see whether they will go east or west? You will be surprised if you ask them that question. That is because their work has not been planned. If they are good men they are worth more to you than that. If a saleman's work is to be effective he must put his intelligence ahead of his call and make a plan not only for the manner in which he is to promote that part of the work for which he is responsible, but he should also plan the time which he has available for the day, the week, the month and the year.

If your sales force do not know thoroughly the sales story of everything they are commissioned to sell they will ring many doorbells without knowing what they are to say when the door is opened, and this means lack of confidence on their part, which is the first requisite of selling. I am not going to take the time to go through the entire sales plans which every one of your men should follow but give this matter the attention it deserves and plan for your men, or with your men, what they are going to say and when they are going to say it. I would suggest that you use the slogan: "Tell More and Sell More."

### *What Every Employee Should Have*

1. *A full understanding of his personal responsibility for the company's progress.*
2. *A definite personal responsibility and the authority to carry it on.*
3. *A complete knowledge of the goods he is selling.*
4. *A practical, workable selling plan given to him by which to work.*

### Training for Salesmen

In our organization we firmly believe in training all our salesmen before we let them go out to sell merchandise. We give them a six months course which includes several months spent at the factory learning every detail of the manufacture of our goods. When they leave there they are so filled up with what they know about the merchandise that they are "just raring to go." Then before we let them go out we put them to a written test and have them write down for us what they want to tell people about our merchandise.

If they had been sent out without this previous training they might have run up against resistances which would discourage them and they would not make good.

### The Woman's Viewpoint

In selling ranges let your men get the woman's viewpoint. Have them attend the classes of the home economist and learn from her how a woman looks at such things as stoves and ranges. The trouble with so many salesmen is that all they feel about a sale is, "I want to get this order for the 15 per cent commission in it for me.'"

That is all wrong. That type of man can't put over the *usefulness* idea of a range without which no housewife is going to be satisfied. We've got to build up a "use it" atmosphere around this merchandise.

### Where to Find Them

Now, the question may be asked, "How are we going to have the type of men who will follow such plans and who will take this proper attitude toward our company?" Salesmen, like sealing wax or automobiles, will be found in the quality for which you are willing to pay. If properly planned you will get exactly what you pay for, and this is my recommendation—that the value of the salesmen to the sales department of the power company be recognized in the dollars represented on their pay checks. You can get these high-grade salesmen and you can get sales representation if you are willing to pay for it. Pay more and they say more. If added effort on the part of your sales force is entitled to added compensation, and if a success is to be made of selling kilowatt-hours through the medium of household electric appliances, then we must recognize the value of the type of men who do this job and pay them accordingly.

### Hang on to Them

And if some of your salesmen make more money than the general superintendent, that's all right. If you can get salesmen who can make more money than the superintendent, hang on to them. There aren't many of them in this world. They're worth their weight in gold.

It is generally accepted that the salary and commission basis for merchandise department salesmen brings the proper results, but when these salesmen through special sales effort and intensive sales campaigns have a big check coming to them at the end of the month, the company should be glad of their earning power rather than discourage them by keeping these checks to a lower figure.

Make your salesman an important part of your organization. Take him into your confidence and make him feel that he is a builder of the business. Sell him your company. Sell him the power house. Sell him the transmission lines. Sell him the substations. Sell him your department, and he will go out and sell for you.

# Courtesy Card Establishes Credit for Customers

By J. E. Loiseau
Secretary, Public Service Company of Colorado, Denver.

CUSTOMER credit standing and customer good will are two features of utmost importance to a utility company. As a composite unit they might be characterized as the keystone in the arch of successful utility service. To establish the first upon a definite basis and to develop and strengthen the second, the electric and gas utility companies of Colorado, New Mexico and Wyoming have launched an innovation that bids fair to become a national institution.

The scheme includes a "courtesy card" designed to be issued to departing customers who are in good standing. At present the idea has been adopted officially only by those companies in the three states aforementioned and is workable in its entirety only in that portion of the Rocky Mountain territory. The card is designed to serve as an introduction of the customer to the electric or gas utility in the district to which the customer is moving. The receiving company thus is informed over the official signature of the issuing company that the bearer of the card has established and maintained satisfactory credit relations with the issuing company. Such an introduction and bit of authentic information naturally obviates many of the tiresome and unpleasant formalities incident to the customer's re-establishment of utility service in a new territory.

The idea was developed jointly by the Public Relations and the Accounting sections of the Rocky Mountain Division of the National Electric Light Association and the administration is being carried on by the Rocky Mountain Committee on Public Information. The feature of the scheme that was of particular interest to the Accounting Section is the fact that the courtesy card furnishes a basis of credit for new customers who previously have established sound credit relations with other companies. Further, the card eliminates the necessity of demanding service deposits in cases where deposits are totally unnecessary as witnessed by the customer's possession of his courtesy card.

### Builds Good Will

From the standpoint of good will and better public relations the card has filled a need long felt by the Public Relations section. The propelling motive has been to develop a suitable card or letter that would bind the customer closer to the utility and create a feeling of closer relationship. The greatest difficulty was to find a satisfactory reason for placing such a card or letter in the hands of a customer. The courtesy card as jointly developed accomplishes the purpose of credit establishment and also puts the customer in possession of something definite and tangible as an expression of the appreciation of the issuing utility. At the same time the card is a forceful reminder to the customer that he has certain definite obligations toward the utility company; that fulfilment of these obligations reflects materially to the customer's own credit.

In spite of the fact that the card is addressed specifically to "All Gas and Electric Utilities of Colorado, New Mexico and Wyoming," the card will be issued to all customers leaving the service of utilities in any of these states even though it may be known that the customer is going to some state other than one of the three. At the outset it is impossible to make such a scheme as this a national feature. However, in the development of the courtesy card the endeavor has been to surround it with such terms and conditions as are necessary to make it highly acceptable to all utilities. Definite conditions controlling the issuance of the cards will so sta-

bilize the issuance that the receiving utility may accept the card at its face value when presented to them by a new customer, knowing that it was issued subject to the same rules that apply in the issuance of its own cards. In fact, the success of the project depends upon this particuar feature.

As before stated, the object behind the development of this courtesy card was the evolution of a method whereby information of the good credit standing of a

COURTESY CARD

*Satisfactory business relations are valuable both to customer and company. In recognition thereof this card is issued.*

_____ 192____

TO ALL GAS AND ELECTRIC UTILITIES OF COLORADO, NEW MEXICO AND WYOMING:
The bearer of this card--

*Mr*_____

whose signature is affixed, has been a valued customer of our company. Our mutual relations have been entirely satisfactory, and we are very pleased to commend him to the courtesies of any Electric or Gas Service Company from which service may be requested.

*(Company name to be inserted here)*

By _____

Bearer's Signature _____

(Utility receiving this card will please keep for reference)

This card gives the customer the benefit of the credit standing that he has built up and consequently strengthens his kindly feeling toward the utility.

customer might be transmitted from one utility to another so that the customer might continue to enjoy in the new community at least some of the advantages that his established good standing in his old community brought him.

Naturally many obstacles to such a plan presented themselves. If a straight credit card were issued it was well within possibility that the use of such a card might be carried to an extreme by a customer by presenting it to firms other than electric or gas utilities. Further, a straight credit card might conflict with the credit policy of some companies. If issued without geographic limitations the card might be presented to companies not familiar with its general purposes and therefore initial official acceptance was restricted to the Rocky Mountain Geographic Division, N.E.L.A.. However, the advantages of the scheme are so many, the cost of its operation so insignificant that the scheme is recommended for general acceptance.

### Developed by Extensive Research

Before adopting the courtesy card as such, the possible effectiveness of a letter from one company to another was discussed. This plan was discarded, however, because of the attendant necessity of determining the destination of the customer, because the letter was unweildy and more costly in its application and because a letter would not be immediately available upon the customer's aplication for service. Also some obvious reason had to be found for placing a card in the possession of a departing customer. Further, it was necessary that such a card convey to the application and credit departments or accounting department of the receiving utility the credit idea and yet not disclose to the holder such a purpose. Necessarily any such system could not be cumbersome, involved or expensive to operate. From these various difficulties and qualifications came the evolution of the courtesy card as such, which meets the situation entirely satisfactorily. The card represents more than a year's research.

In addition to the card itself it was found necessary to familiarize thoroughly all the participating companies with the governing conditions and purposes of issuance of these cards. In addition to the many intercompany discussions that preceded the adoption of the card and in addition to letters of general instructions a wall card such as shown was prepared and circulated to participating companies. This card of instructions is designed to hang at the windows, desk or counters, of the application, the credit or the accounting department, as the case may be, where the customer will make application for service. The wall card carries complete instructions regarding the conditions of issuance, the purpose, and the application of the courtesy cards.

### Issuance Uniformly Regulated

It may be observed that this instruction card lays particular stress upon the necessity of all companies issuing the courtesy card under the same conditions. This is particularly essential since the value of the courtesy card as a medium of credit will disappear totally if the receiving company cannot depend upon its reliability. Further, it is perfectly obvious that the courtesy card also will lose its value if the receiving company does not most cordially receive new customers presenting such a card.

COURTESY CARD

CONDITIONS AND PURPOSES OF ISSUANCE (FOR INFORMATION OF APPLICATIONS AND CREDIT MEN)

**To be issued by Gas and Electric Companies in Colorado, Wyoming and New Mexico.**

CONDITIONS

**To be issued only to domestic customers in good credit standing when leaving a city.**

***(Prompt payment of all obligations for a minimum period of 6 months necessary.)***

**Card to be issued with thought in mind that many utilities to which it is presented by holder will use it as basis of credit.**

**Card to interfere in no way with the rules and regulations of utility companies.**

PURPOSE

**Primarily to give the customer recognition of his good standing and to create in him an appreciation for the service and courtesy of the utility.**

**To remind the customer that good service is mutual and encourage future performance on his part.**

**To pass on to other utilities the good record of a customer.**

**To create incentive for a customer to pay all utility accounts before leaving a city.**

**To make possible elimination of demand for deposits from new customers when deposits are unnecessary.**

APPLICATION

**Card to be given or mailed customer only after payment of final bills.**

**To prevent possible use for credit purposes, card to be taken up by company to which it is presented.**

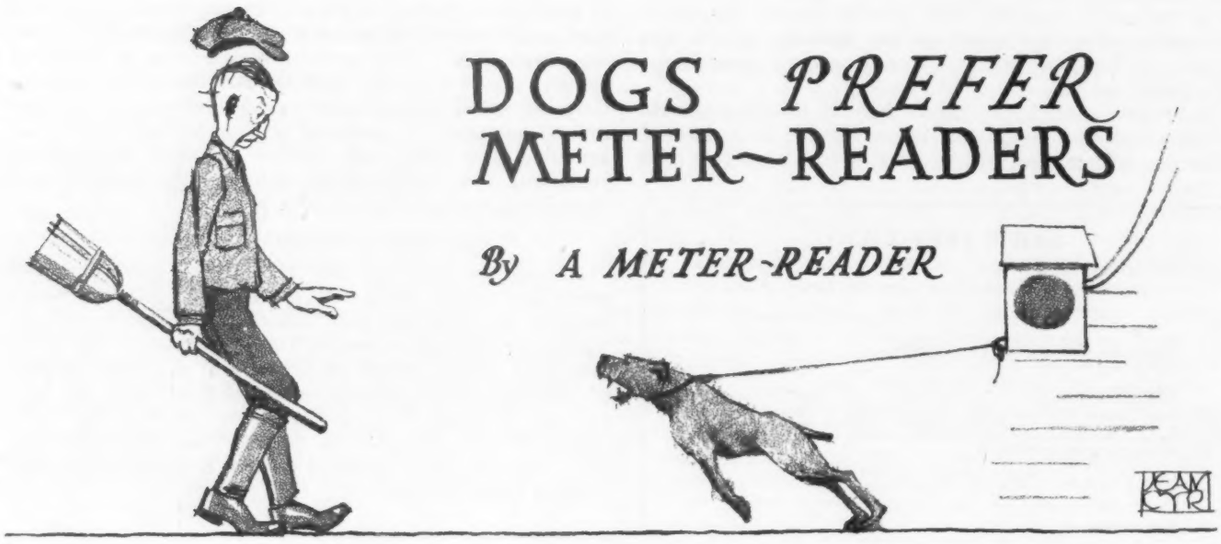
**For it to have a wide acceptance necessarily means that it must be issued under the same circumstances in all cases, as outlined above.**

**The success of this courtesy card depends on the care in issuance and the reception of the customer upon its presentation.**

***Please preserve and keep displayed in convenient location for employees only.***

Instructions governing the issuance of the "courtesy card"; to be hung where employees handling cards may observe.

To prevent undesirable use or misuse of the courtesy card it was deemed advisable to have the receiving company retain the courtesy cards when presented as the cards will then have accomplished their purpose in establishing the holder's standing. Further, the customer thus will be made to feel that upon his prompt payment and fair treatment of the utility depends the issuance of another courtesy card in the event of a subsequent move.



# DOGS *PREFER* METER-READERS

*By A METER-READER*

THE dog is the meter reader's bugaboo. A meter reader watches for dogs until a rattling, wind swept paper from around the corner strikes terror to his soul.

"A dog is O.K. if you know him or, better, if he knows you," he says, "but to come face to face with a strange, surprised, and faithful, watch dog is most disconcerting."

But after numerous attacks, a bite or two, one learns to reason with dogs. One begins to know some of their characteristics. For instance: the airedale is a one-man dog with a memory; the bulldog sets his teeth and holds fast.

Yet, this knowledge is more or less superficial because a dog's individuality is constantly cropping out. But then we may be aware, in a general way, that monsters are vicious and poodles are not, and vice versa.

Anyway, now that we understand what I mean, I will use some examples to explain.

There once lived a cranky individual who reasoned that we, the Light Company, could not bill his electricity without first reading his meter. So to obscure the view he chained his friend, an airedale dog, under the meter. Each month I was greeted by a show of teeth, a snarl, and a low grumbling as of distant thunder. But I habitually cowered the dog by advancing with a broom. If necessary I gently rapped him on the snoot, not to upset the dog, you understand.

I had been doing other work for a year when I happened by the house of the crank. He had passed beyond; but, I was to learn, he never forfeited the right to govern his dog from below. I saw that the dog was at liberty, romping and playing as carefree as a lamb.

"Wonderful what time and a changed association will do," I was philosophizing, as I entered a yard next door. "What a nice dog he has turned out to be."

Snap—from behind. Teeth sank into the cords back of the knee. I felt the crack of sinew and the blood gush out. Then, as I turned, the dog dashed from sight. In memory of the broom, I suppose. Ye, I was repaid in full; but poor doggie is doing time at the

Bow Wow's Calaboose. That shows the injustice of things. And the whole affair teaches that airdale dogs have good memories.

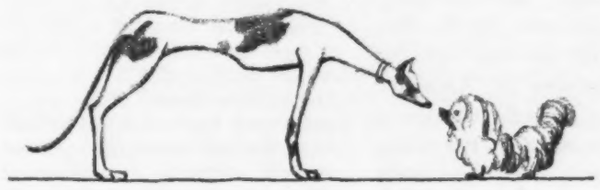
My encounter with a bulldog was somewhat different, the two dogs having dissimilar dispositions. I had climbed a fence, it being too high to leap. I let myself drop into the yard on the other side and started for the meter. I came to a short stop, greeted by a bark,—not a friendly bark of welcome, I inform you, but a low growl emitted from between set teeth. Not ten feet distant crouched a giant bulldog, *untied!* I admit I was scared. I stood glued to the spot while a ticklish sensation played in my hair.

If I had stood there or moved off slowly all would have been well. But I turned and fled. I did not get far, however. I was rudely detained. The bull harshly and firmly seized me by the leg. Again I felt the crack of flesh and the gush of blood. This time the hold did not give. The brute's teeth held. But finally I tore loose and leaped the fence—it could be done now. Moral: Bulldogs have good grips.

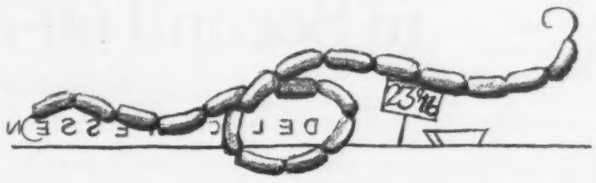
But although most of this is neither somewhere else nor here, you may have surmised that I have learned something from dogs. And, perhaps, I could pass on a store of knowledge to an awaiting public, if modesty did not prohibit. But I will cite a few hints on self-protection out of the goodness of my heart.

In the presence of a vicious dog one must use his wits, be calm and match intelligence with that of the dog. An angry dog bites in the most convenient place. That gives one some choice. And here is the secret. A raging dog, seldom, if ever, distinguishes a book, board, or like object from an extremity. Do you see the trick? Ah, yes! Do not throw the object held at the on-rushing carnivorous. Hold it out to him. Let him sink his teeth into it. Then, if necessary, give him a kick under the chin. That has its effect.

But usually a dog is kind enough to give a warning growl before charging. If warned do not break into a run. Eye the dog and move away slowly. Back away, keeping Mr. Dog in front or in sight. But if the dog ad-



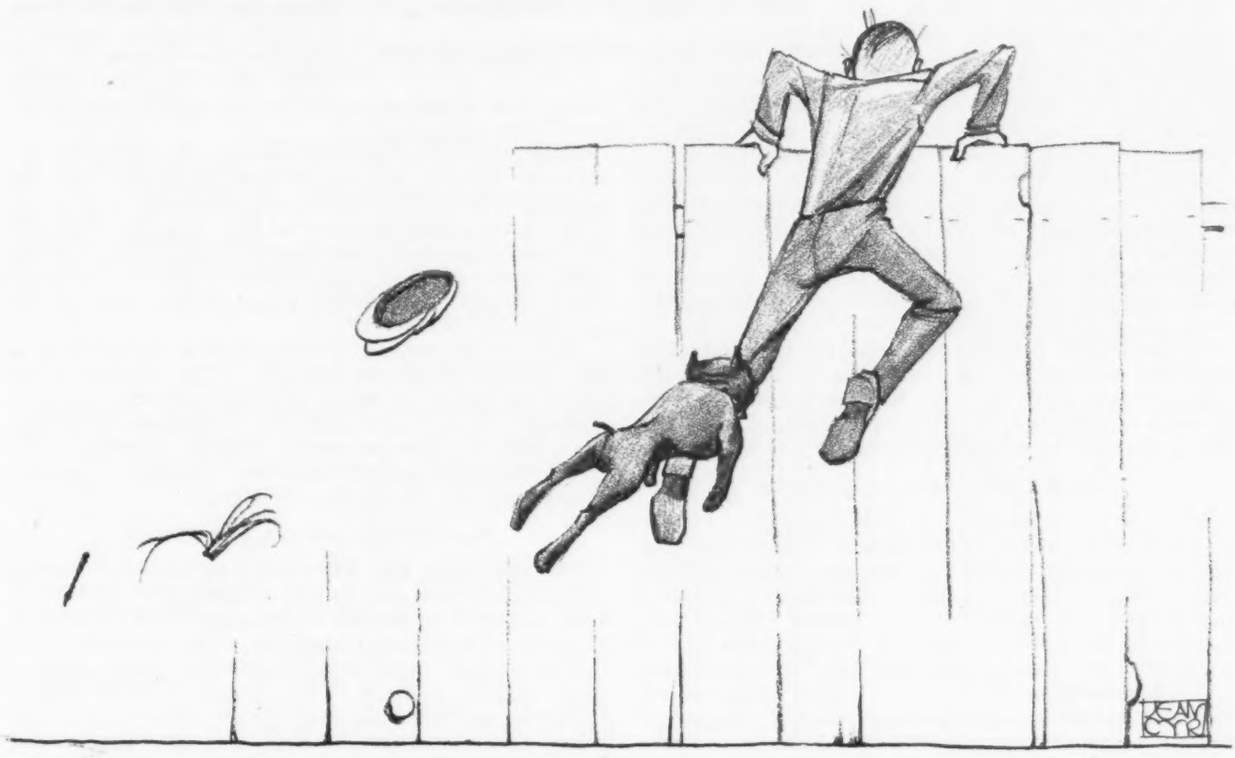
vances reach down as if to pick up a rock. Time and time again, I have cowered a dog by this method. It allows time to get beyond harm by holding the dog in suspense. Mind, it is not necessary to actually pick up a rock. The motion of stooping and the action of deliberating a throw works wonders. A dog is not dumb. He realizes that our advantage lies in our ability to use tools. And the dog questions a defying look. He respects a masterful man.



In reading my ramblings one could surmise that I consider all dogs mad! Not at all, not at all. I love them! There are hundreds around the country that are my best of friends. I always make a friend of a dog, if I may. But, mind you, CAUTION is the word. Never pet a dog till you know him. Some snap! But, as a whole, dogs are good dogs. And it is hardly in justice to censure a guard for getting peevish if the yard of his master is trespassed.

Get a dog's good will. Be introduced by his master; most dogs will recognize a former acquaintance. Remember a dog's name. Let your actions be friendly. To be able to repeat a dog's name has a soothing effect. "Rover, here Rover," and "Good-morning Mr. Link," are synonymous.

Taking it all in all, dogs are like men in many ways. Some need coaxing, some need disuading, some will just be friends. Others will have nothing to do with us and must be left alone. Still others mean us no good and must be guarded against. So we discover that dogs, like human beings, must be calmly and tactfully treated with goodwill or good opposition, as the case warrants.



# Northwest Company Sells 2,769 Ranges in Second 60-day Campaign

By Andrew G. Gordon

Puget Sound Power & Light Company, Seattle.

IF THE proper man were to take his pen in hand he might find little difficulty in writing a merchandising epic around the achievement of selling 2,769 electric ranges in sixty days. Particularly would this be true when one bears in mind that the territory in which the campaign was staged is honeycombed with gas and cheap coal and wood competition. Moreover, no consideration can be given to the sales of other electric range dealers who shrewdly took advantage of the drive. While it is obvious that sales made through this last mentioned channel might be considerable and will be reflected in the company's load factor, this article will deal only with the 2,769 Westinghouse ranges sold directly by the Puget Sound Power & Light Company—not with any object of writing an epic about the achievement but in the hope that a brief outline of the methods employed may be of some assistance to others engaged in a like line of business.

**OPERATING among approximately 84,000 domestic customers, in the face of gas competition and in one of the cheapest soft coal districts in America, the Puget Sound Power & Light Company has sold 4,812 electric ranges in two campaigns of 60 days each. The first campaign, resulting in the sale of 2,043 ranges established a record, and the second, with 2,769 sales, broke it. Great merchandising results such as these are seldom achieved by the mere initiation of a momentary drive. Some of the factors that have made figures like these possible of accomplishment are outlined in this article.**

It is well to bear in mind right from the start that the entire Puget Sound Power & Light Company is organized internally on a military staff and line system and this form of organization is brought to bear, not only on range and appliance campaigns, but on other problems as well. Experience with this organization has brought out that, while it may be possible to secure results of a kind by a spasmodic effort of great intensity, real achievement is attained only by careful preparation of the field of operation, outlining a campaign designed to meet every possible emergency and carefully instructing every operative to be engaged.

As far as this company is concerned, the sale which has just resulted in the connection of 2,769 electric ranges within sixty days has been in preparation over a period of years and marks, we hope, only a temporary climax that will be dimmed with future accomplishment.

### Overcoming Sales Resistance

In a country where wood is to be had almost for cutting and soft coal mines are located, in more than one instance, virtually within the principal towns, and gas plants abound on every hand, it was no easy matter a few years ago to sell any electric ranges. There were, in fact, three great obstacles to be overcome. These were, first, the popular idea that electric cooking was, like flying machines, in the experimental stage; second, the delusion that, compared to coal, wood or gas, electric cooking was expensive; and third, that the cost of electric ranges themselves was prohibitive.

It is obvious that prejudices of this nature are not cleared away in a day or a month or a year. They have been overcome by concentrating all advertising, propaganda and sales effort for a number of years on dispelling these false notions. How effectively the soil has been prepared by the painstaking effort of previous years is shown by the range sales records for 1926. The campaign under discussion was the second to be held during the year. In the first campaign 2,043 ranges were sold; in the second, 2,769 ranges. In the first eight and a half months of 1926 range sales totalled 5,622. During the entire year 1924 range sales only reached 2,654 or less than the last campaign. At the end of 1924 it is estimated that there were but 15,000 ranges in the entire state of Weshington. On Oct. 16, 1926, there were 16,731 connected electric ranges on the Puget Sound Power & Light Company's system,—a system that serves approximately 84,000 residential consumers. In other words, the Puget Sound Power & Light Company, operating in one of the cheapest coal and wood areas in the United States, has succeeded in placing an electric range in almost every fifth home.

Merely for the purpose of analogy, the statement can be made that the strategy of these campaigns and the method of preparing the terrain originated with H. J. Gille, general sales manager of the company. The tactical operations have been under the direction of R. W. Lindley, merchandise sales manager, and the battalion command and responsibility placed in the hands of the district sales managers.

Much of the success of the campaign depended upon the organization of the company. The company is divided into seven operating districts with district managers and district sales managers at Bellingham (Northern), Everett (Northeastern), Seattle (Central), Tacoma (Southwestern), Bremerton (Western), Chehalis (Southern) and Wenatchee (Eastern).

### Preliminary Organization Work

The first thing that was done, long before the actual campaign started, was to call a meeting of all district sales managers in Seattle for the purpose of considering all factors affecting the campaign. The condition of the lumber market, farm returns, condition of the poultryman, cement business, fruit crops, building trades, business conditions in the smaller communities, and every other factor that could possibly have any bearing upon the results were discussed at length. Because

prizes are offered to districts making the best records extreme care was taken in the setting up of district quotas and careful consideration given to factors which might affect these quotas. Thus it was impossible for a district sales manager to paint a doleful picture of conditions in his district with the view of getting a low quota that might easily be over-shot. In justice to the men, it can be said that at the time the quotas were set not one district sales manager expected to sell 100 per cent of his quota.

The following are the quotas finally agreed upon:

| | |
|---|---|
| Central District (Seattle) | 450 ranges |
| Southwestern District (Tacoma) | 200 ranges |
| Northeastern District (Everett) | 200 ranges |
| Northern District (Bellingham) | 200 ranges |
| Eastern District (Wenatchee) | 125 ranges |
| Southern District (Chehalis) | 125 ranges |
| Western District (Bremerton) | 125 ranges |
| Total | 1425 |

With quotas assigned to the districts, the sales managers returned home and set quotas for the salesmen operating under them, taking details of occupation, territory covered and all other factors into consideration in the same manner as the district quotas were set.

Too much credit cannot be given the district sales managers for the part which they played in bringing this range campaign to the success which finally crowned it. It was their never-ceasing enthusiasm, continual watchfulness and unflagging interest which kept things moving in all districts all the time. These men are Fred H. Kerr of the Western District; Louis Shreve of the Eastern District; Homer S. Atwood of the Northeastern District; George Barber of the Northern District; R. W. Clark of the Central District; Rome Saunders of the Southwestern District and W. A. Schoel of the Southern District.

### Prizes Set Up

With these details perfected the following individual and district prizes were determined upon:

First grand prize to be awarded to the district manager whose district sells the highest percentage of its quota during the campaign.

Additional grand prize of $100 to be awarded to the district selling the highest percentage of its quota during the campaign. The disposition of this prize to be determined by the sales manager of the winning district.

Sales manager's prize offered to the sales manager of the district selling the highest percentage of its quota during the campaign.

First individual prize for the employee making the largest number of direct sales, all employees of all districts (except commission salesmen) being eligible to compete.

Second individual prize for the commission salesman making the largest number of direct sales and open to all commission salesmen in all districts.

Third individual prize for the employee selling the second greatest number of Westinghouse ranges, all employees of all districts (except commission salesmen) being eligible.

Fourth individual prize for the salesman placing the greatest number of Westinghouse hot water heaters on the lines and open to all employees, regular and commissioned, in all districts.

Fifth individual prize to the regular or commission salesman in each district making the largest number of direct sales.

Bonuses for suburban employees to be awarded to each suburban division selling 100 per cent or more of its quota—a money prize to be divided among division employees who make sales, in proportion to the number of sales made by each, sales to apartment houses not counting.

Not more than one individual prize was awarded to any salesman, and, in event of one man winning more than one prize, the fifth individual prize was to be awarded to the next highest employee.

A cash bonus was also offered each commission salesman for selling 100 per cent of his quota and an additional cash bonus for each range in excess of his quota.

### Scale of Commissions

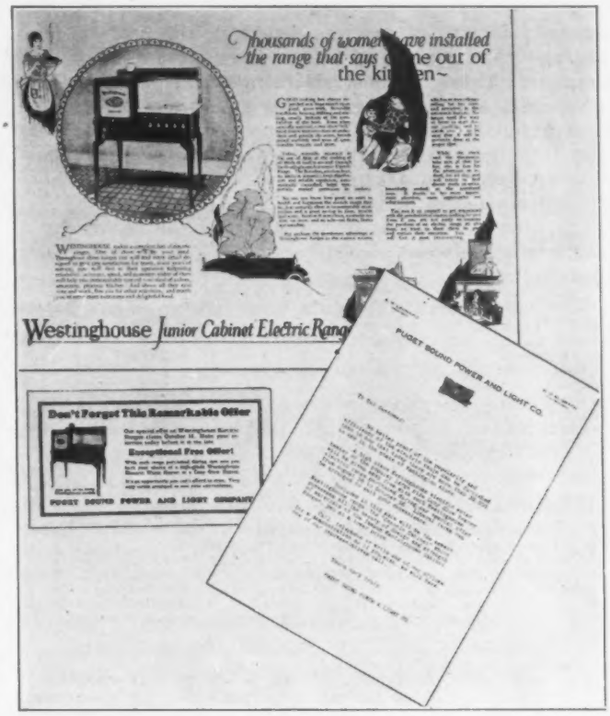
With district and individual quotas set up and with prizes on exhibition, the problem confronting the sales department was to interest not only commission and regular salesmen in the campaign but every employee of the company as well. To this end the entire personnel of the organization was divided into three classifications and inducements in the way of commissions offered that would make a sustained co-operative effort bring forth a suitable reward. Commissions were based upon cash prices and did not apply to ranges sold either to employees or apartment houses. Salesmen on a regular commission basis were paid 10 per cent for each sale originated and closed. All employees not included in the above group and not salaried employees of the appliance department were given 5 per cent for each sale originated and closed. Salaried employees of the appliance department participated in an even distribution of one-half of one per cent of the gross receipts of the campaign based upon cash prices.

As has been said before the range featured in the campaign was of Westinghouse manufacture. Ranges were offered at cost plus 25 per cent for cash and cost plus 34½ per cent on terms. An effort was made to sell as many ranges as possible for cash but terms could be arranged with a down payment as low as $10. As a premium with each range sold the purchaser was offered a choice of a Westinghouse hot water heater or a "Cozy Glow" portable heater.

### Advertising and Publicity

Just prior to the opening of the campaign Aug. 16, meetings were held in each of the districts. The first announcement of the campaign was made Aug. 1. This consisted of a letter broadside to every customer of the company announcing the special terms of the sale. This was followed by envelope stuffers. Suitable publicity material was supplied to the newspapers on the basis of a reasonable advertising schedule. Special window displays were placed in each of the forty-two stores operated by the company; special banners were hung wherever possible and every truck operated by the company carried a sign announcing the campaign.

The danger of a possible slackening of interest after the first burst of enthusiasm was anticipated. As soon as the campaign was well under way a corps of West-


Thousands of women have installed the range that says "Come out of the kitchen"
Westinghouse Junior Cabinet Electric Range
Don't Forget This Remarkable Offer
Exceptional Free Offer!
PUGET SOUND POWER AND LIGHT CO.

Sample of the broadside mailed to all customers and one of the envelope stuffers used in the campaign.

Samples of some of the newspaper advertising used in the campaign.

inghouse demonstrators was placed in the field to demonstrate the ranges in every store operated by the company. These demonstrations were advertised in the newspapers and by means of special invitations directed to individual customers. Because daily reports were sent into heaquarters from each district, it was possible to direct the demonstrators to any district where interest seemed to be lagging.

The ultimate success of the campaign is shown by a comparison between district quotas and actual sales. These follow:

| District | Set Quota | Actual Sales |
|---|---|---|
| Central | 450 | 1,243 |
| Southwestern | 200 | 180 |
| Northeastern | 200 | 263 |
| Northern | 200 | 248 |
| Eastern | 125 | 195 |
| Southern | 125 | 142 |
| Western | 125 | 261 |
| Miscellaneous sales | | 237 |
| Total | | 2,769 |

Prize awards were made as follows:

First grand prize to E. T. Steel, manager of the Western District.
Additional grand prize to the Western District.
Sales manager's prize to Fred H. Kerr of the Western District.
First individual prize to C. W. Sherman of the Northern District.
Second individual prize to O. W. Dixon of the Western District.
Third individual prize to W. E. Evans of the Central District.
Fourth individual prize to W. J. Stevenson of the Northwestern District.

The best idea, however, of the work of our salesmen, is offered by a study of the results which led up to the award of gold watches presented by President A. W. Leonard. The original idea was to present seven watches, —one to the salesman in each district exceeding his quota by the highest percentage; but this had to be revised for the reason that two salesmen in the Western District tied for first place, while one salesman in the Central District established a record on his own in placing apartment house ranges during the range campaign period. In this way it was necessary to increase the number of watch awards to nine. Here are the winning salesmen, their individual quotas, their individual sales and their percentages:

| Salesman | District | Quota | Actual Sales | Percentage |
|---|---|---|---|---|
| E. H. Keiser | Central | 25 | 50 | 200 |
| Harley Bryant | Eastern | 18 | 45 | 250 |
| C. W. Sherman | Northern | 50 | 131 | 262 |
| G. F. Fishback | Southwestern | 50 | 58 | 118 |
| Jack Spencer | Northeastern | 50 | 59 | 118 |
| L. E. McWade | Western | 10 | 22 | 220 |
| R. G. Moon | Western | 20 | 44 | 220 |
| H. L. Holcombe | Southern | 14 | 27 | 192.8 |
| T. H. Sawyer | Central | 200 (apt.house) | 850 | 425 |

As far as the company is concerned this campaign is the final word in generalship, planning, co-operation and team-work. Based upon the results of the two campaigns in 1926 expectations are naturally high for 1927. Yet it is well when studying such results to remember that they were not achieved in a day. They represent the reward of years of pioneering. However, those that are willing to go as far in the matter of service and organization will find the same rewards as have been found by the Puget Sound Power & Light Company.

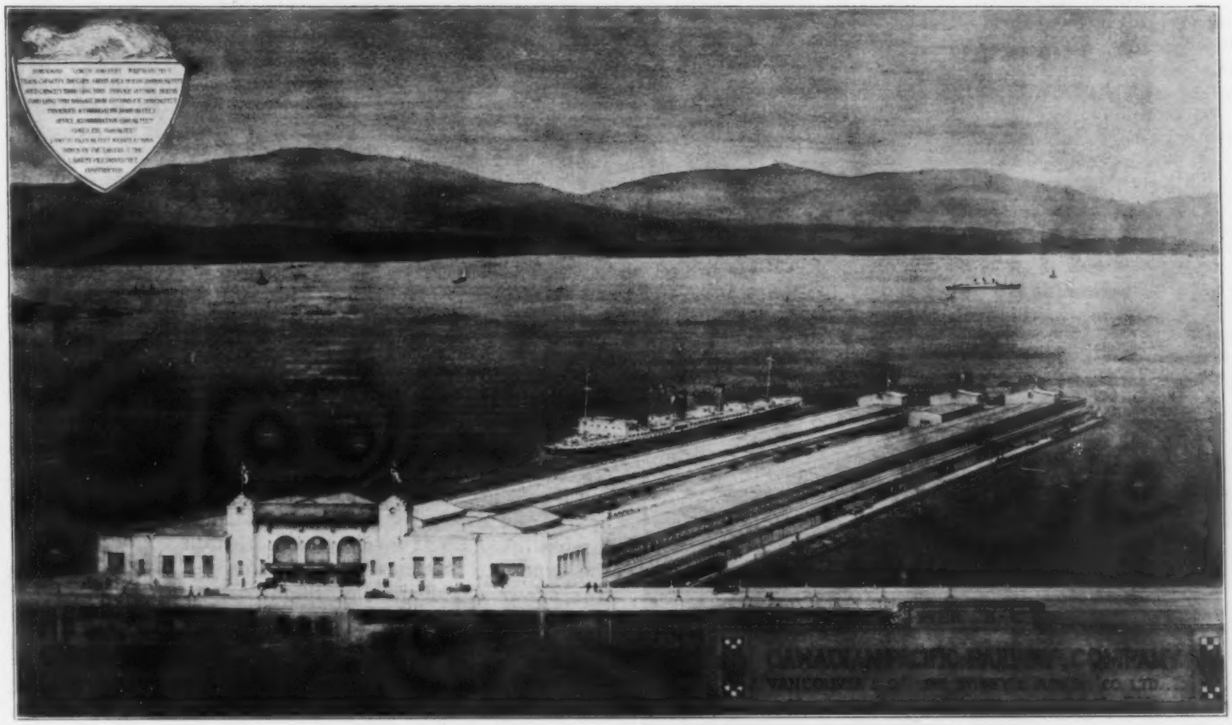


Fig. 1.—Pier "B-C" of the Canadian Pacific Railway, Vancouver.

# Electric Equipment of New Canadian Pacific Pier at Vancouver

By L. E. Dunham

Electrical Engineer, The Sydney E. Junkins Company, Ltd., Vancouver, B. C.

THE Canadian Pacific Railway has finished construction at Vancouver, B. C., of a large reinforced concrete pile pier with reinforced concrete deck. The pier and its appurtenances embrace many unique electrical features. A steel frame viaduct with reinforced concrete roadway (from the east end of which slopes a ramp to the lower deck) runs along the face of the structure and connects the upper, or passenger deck, to two viaduct extensions of the city streets. The south headhouse is steel-frame construction with concrete and stucco finish, but the main sheds are of timber trusses supporting tar and gravel roofs. The outside dimensions of the pier proper, excluding the adjacent quay wharves and viaduct, are 1,200 ft. in length by 331 ft. in width. The second story will accommodate ticket offices, waiting rooms, baggage room, warehouse for ships' stores, general office, and the executive offices of the Ocean Steamship Service of the Railway. Leading from this part of the building, a promenade is constructed down each side of the pier and along the north end over the roofs of the freight sheds. Connections are made from this promenade to ships by a long gangway, so that passengers may embark and disembark without at any time interfering with the freight handling facilities on the main deck. A general view of the pier is shown in Fig. 1.

Fig. 2 shows the lower deck plan. On it are designated the positions of the different sheds which are separated by firewalls, the depressed track area for car storage, the marine elevators, the panel boxes, and the transformer vaults. Fig. 3 gives an idea of the interior of the typical shed which is divided into 20-ft. bays by the columns supporting the roof, leaving an uninterrupted space or driveway about 50 ft. wide under the monitor or higher part of the roof.

## Lighting Requirements

When moving from point to point, or in ordinary trucking of freight, provided the light is uniform, a high intensity is not necessary, but when checking freight and examing illegible markings on freight packages, an intensity equal to that required for office work is not considered too high and should be at command when needed for work which often has to be done against time and where a mistake avoided has a definite cash value.

Often a shed is used merely as a passage-way from one working zone to another, but light is needed on the driveway, and in fact over the whole area, to allow the watchmen to perform their duties both when sheds are being worked and when they are making regular patrols and door inspections after working hours.

When handling freight at night, good light is necessary right up to the ship's side if work is to be done with safety and speed, and at all times after dark enough light is necessary to make the wharf a safe place along which to travel.

### General Inside Light

This lighting is provided in three sections as follows:

(1) A string of 100-watt lamps in standard industrial reflectors is mounted, one every 20 ft., over the center of the driveway.

(2) A string of 100-watt lamps in angle reflectors mounted in the center of each 20-ft. bay over the door leading to the wharf and turned to reflect most of the light toward the center of the shed.

(3) A similar string on the opposite side of the shed over the driveways leading to the depressed track area.

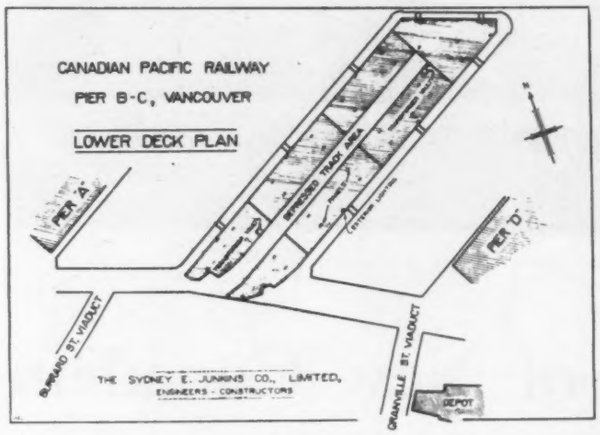



Fig. 2.—Lower deck plan of new pier.

Half of each of these strings of light is fed from the panel box supplying its area and is turned on by a 15-amp. contactor, while both the contactors are controlled from two points by three-way switches located on doorway pillars at either end of the sheds.

With the general lighting cared for, a bay can be considered as the area from the center line of the shed to the doorway on one side. Two 300-watt lamps in standard reflectors supply the local lighting for each of these areas. Switches mounted two to a post at 40-ft. centers control the bays on either side of the post.

To obtain the spread of light in a building of this construction, it is necessary to mount fixtures at different heights and it was feared that this might give an uneven distribution of light when any continuous area was fully lighted, but such has not proved the case.

Duplex plug receptacles mounted at 40-ft centers near the doorways supply connections for portable lights used for handling freight in or out of cars.

Summing up, in this area there are two duplex plug receptacles, two tumbler switches, four 300-watt lamps, and three 100-watt lamps in each 20-ft. section across the shed.

### Panel Boxes and Branch Circuits

Each shed is less than 400 ft. long. Four panel boxes, two on each side of the driveway, serve for inside lights and plug receptacles. Advantage is taken of the 1923 Underwriters' Code Ruling, which allows 3-wire branch circuits on single phase 220-110-volt grounded neutral circuits and does not fuse the neutral. This cuts the fuses in half and saves a quarter of the wire and when the switches are all located near the lights they control the panel boxes can be of simple and cheap construction, and, further, can be kept locked, preventing the doors swinging open as so often happens when switches are in the panel boxes. No. 12 wire is used on circuits with load centers over 80 ft. from the panel and wires with different colored braids are used wherever it is necessary to identify any circuit. Fourteen different markings are used in No. 12 and No. 14 wires. The cost is never over five per cent higher than straight black and the mistakes avoided make the distinctively marked conductors a paying investment.

### Outside Lighting

A minimum lighting for wharf and street illumination is necessary through all the hours of darkness. On the wharf areas this is supplied by 300-watt lamps in reflectors which spread their light very little back of the vertical, but give a good distribution sideways and in front, making them ideal when lights can be mounted only along a sidewall.

Fig. 4 shows the location of wharf lights, placed 20 ft. apart, and every fourth one used for the minimum illumination. Local switches are installed at and below the panel box which serves the area in front of a shed; this allows any degree of illumination up to the maximum to be used as needed. The promenade, fed from the same panel, is lighted by a marine type of fixture, standard on Canadian Pacific coast boats and manufactured by a local firm. These are placed at 20-ft. intervals and alternate lights are on the same circuit. The street lights will be in standards much like those of the City of Vancouver, and will be arranged so that half can be turned off at midnight.

It is intended to light the front of the upper story building enough to have it stand out distinctly against the dark background of the harbor and mountains. To keep the street lights from catching the eye when looking from the south ends of Granville and Burrard Street viaducts, these standards are placed on the south side only of the viaduct, in front of the buildings, and are shaded to allow as little light as possible to show toward the south.

Fig. 3.—Interior view showing general lighting.

Flood lights placed wherever possible without being conspicuous will be used for the illumination of the building front.

The uncovered part of the depressed track area, about 800 ft. in length, will be illuminated only when the

wharf foreman or watchmen wish to make an inspection. Two batteries of five flood lamps each, mounted on the buildings at the ends of this area, and focussed to light the whole space, are controlled from three different points. An electric sign will be placed on the north end, the words "CANADIAN PACIFIC" being shown.

### Upper Story Lighting

Lighting in the upper floor is divided as follows:

(1) The industrial, such as the baggage room, store room, etc., which will have the same type of lamps, sockets and switches as the sheds.

(2) The general office, which will have some standard type of office fixture with special attention paid to the switching, so as to permit those furthest from the windows to have light without turning on all the room circuits.

(3) The executive offices, which will have standard ceiling outlets and a liberal allowance of baseboard receptacles for attaching desk lamps. The type of fixture to be installed in these offices will probably be governed by the individual taste of the occupant.

(4) Rest and waiting rooms, which will have standard lighting, except the main concourse, which will have indirect lighting concealed in eight large and four small ornamental urns mounted on the pillars and in the corners.

### Controls

All outside lights except those mentioned are operated by switches from a control panel located in the corridor leading to the promenades. These switches each handle a number of 15-amp. contactors located in the lower gutter of the panel boxes from which the circuits they operate get power. The circuits differ from the ordinary, in that they turn on by contactor instead of tumbler switch.

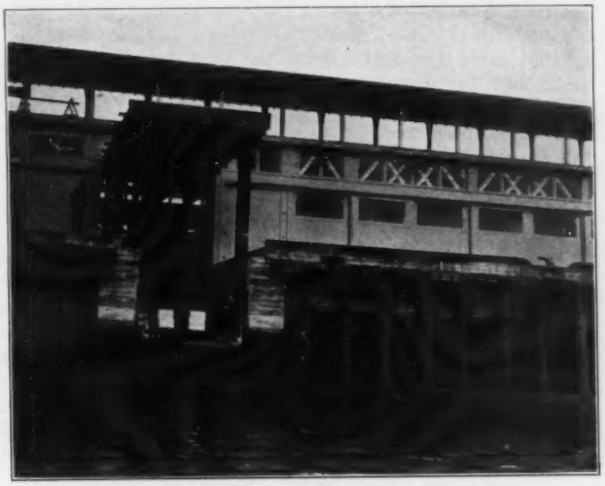


Fig. 4.—Exterior of pier showing lighting and one of the electric cargo elevators.

### Feeders

In general, the feeder circuits will supply two panel boxes each, and these panels are so separated and the feeder so divided among phases, that no shed or area will lose more than half its light if a feeder or transformer fails. Except for two 110-volt circuits, which feed plugs along the wharf side for supplying coast-wise boats with light when their generators are shut down, it was not considered necessary to use wire larger than that required to meet the current carrying capacity of the code. All feeders except those named are No. 1 wire. Different colored insulations are used, and conduits are filled with wires up to the limits set by the code. Pull boxes of generous size, never more than 100 ft. apart, provide ready access to the circuits at numerous points.

### Remarks

Except for a few kitchen units used in vaults and wharf offices, the reflectors used are of a make standard with the Canadian Pacific Railway, and except for those in outside use, can be unscrewed from the hoods and taken down for cleaning. The hoods have a type of socket base which will take a standard or mogul socket without change. Switches and receptacles are of standard type such as are used for ordinary good house wiring. Their capacity is ample for the loads they are called upon to handle, and if they will be broken by careless handling of freight, the objects that will break them would break types costing ten times as much. Of course the labor of replacing these types is the same as for more expensive apparatus, but the maintenance department is sure of finding them in stock in any local supply house and no parts need be carried in the railway store room.

Fig. 5.—Lighting service switchboard.

### Power Requirements

The three-phase power circuits standard with the Canadian Pacific Railway are 550-volt and will feed the motors for the following:

1 team elevator
1 team elevator sump pump
2 baggage elevators
8 marine elevators
6 bridges for marine elevators
2 traveling cargo cranes
1 air compressor for sprinkler system
1 oil pump motor and the load for Pier "A," both of which now feed direct from the Canadian Pacific Railway depot.

Fig 4 also shows the marine elevators and the side of the shed where the three-phase trolley for the cargo crane is concealed and protected by the roof overhang.

It also gives a good view of the concrete piles which support the wharf and sheds, and of the creosoted pile fender system. The trolleys extend for about 1,000 ft. along both the east and west wharf; each is fed from two sources, and each is cut into four pieces by three sectionalizing switches. From these trolleys and their feeders are taken off the taps for all the apparatus mentioned above.

The arrangement is such that every motor can get power from both sources or from either, as may be desired, and any section of feeder or trolley can be killed for repairs without putting any piece of apparatus out of service except a cargo crane which may be drawing power from that section. Power connections are required in the sheds to operate portable freight transferring and elevating machinery, and fused safety switches are placed at convenient points along the driveway at 100-ft. intervals. All of the power installation

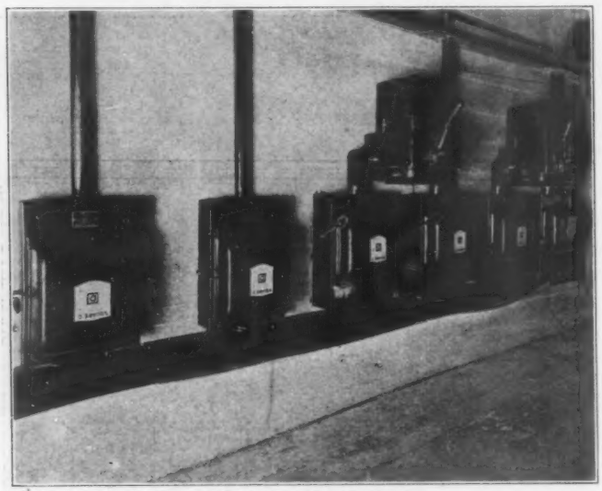


Fig. 6.—Power switches and circuit breakers.

is the ordinary work of its kind, the only point which would be of interest being the electric brake on the marine elevators, which, when first seen in operation, gives most electrical men a jolt. The brake which holds the elevator platform when at rest is spring-operated and has to be released to start the machinery. When the power for the elevator motor is turned on, a small torque motor also takes power, makes two revolutions, and, acting through a geared segment, compresses the spring enough to release the brake. It then stalls and holds the spring compressed until the power goes off, when the released spring backs up the motor and sets the brake.

### Transformer Vaults and Cables

The transformers and low-voltage switches are housed under the lower deck in two vaults of two rooms each, with floors and walls of concrete as ordinarily poured on the pier, without any other waterproofing. Extreme tides rise 3 ft. above the floor level but no sign of leakage has appeared, nor is any expected. The smaller room contains the lower voltage switches. Fig. 5 shows the 220-110-volt lighting distribution equipment, and Fig. 6 the 550-volt circuit breakers and switches. The larger room contains all the 2300-volt apparatus.

The lighting switchboard is made of externally operated switches mounted on the wall, fed from gutters above distributing to gutters below, all live parts being protected. Care has been taken to use no more wall space than is necessary for comfortable clearance and to make possible the removal of any part with minimum of disturbance of other equipment.

The 550-volt oil circuit breakers can take power from both transformer vaults, and to isolate them for inspection or repairs, an externally operated switch has been installed on either side of the breaker. Room is provided for mounting a static condenser on the 550-volt bus, or, if investigation shows a 2,300-volt condenser to be more desirable, there is space in the transformer room for its installation. The south, or "A" transformer vault, holds three 100-kva., 2,200 to 550-volt power transformers and three 75-kva., 2,200 to 220-110-volt lighting transformers, and a 1-kva. vault lighting transformer to supply light as long as the 2,300-volt bus is alive. The north, or "B" vault, is similar to "A" except that the 220-110-volt bus is of varnished cambric insulated conductors in conduit, and all connections are made outside the conduit. Barriers protect all disconnecting switches which are mounted on the wall and conduit is carried into all oil circuit breakers, while disconnecting switches or cut-outs allow all apparatus to be completely isolated without going outside the two rooms of the vault. Two paper-insulated, lead-covered, armored cables enter each vault. Along the viaducts and under the pier these are supported on a copper weld messenger. One is a tie cable between the two vaults; the other is a feed cable which for the north vault comes from the 2,300-volt bus in the Canadian Pacific Railway depot, and for the south vault from a new connection to be made at Burrard Street with the lines of the power company.

### Miscellaneous

Beside the light and power requirements, a fire alarm and night watchmen's system, with provision for calling and talking to watchmen, supervision of valves and heads of the sprinkler system, is provided. This involves a central station in the office of the investigation department in the Canadian Pacific Railway depot and a fire alarm cable a third of a mile long.

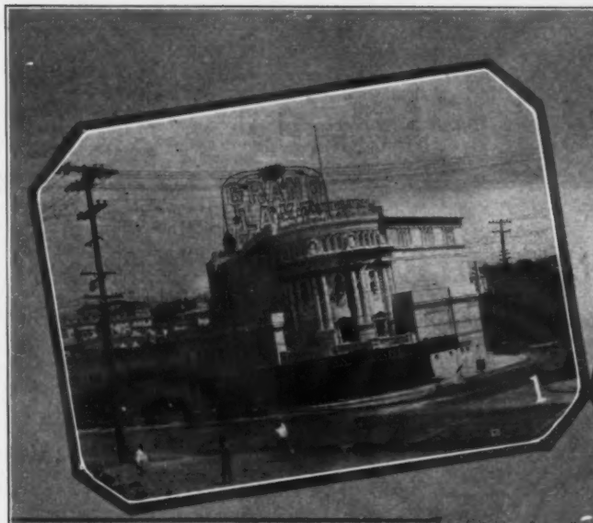
Other details are a tower clock controlled by the master clock in the yard master's office; a 100-pair main telephone cable from the depot switchboard, and laterals of 25-pair for distribution through the sheds and offices and to the wharf edge for ship connections. The recess for this ship connection and the end of the conduit serving it can be seen in the concrete face of the pier to the right of the elevator shown in Fig. 4.

### Tools and Methods

A portable pipe cutting and threading machine that handled pipe sizes from ½ in. to 4 in. with the ordinary hand tools, was used wherever the men could be bunched for work, and when time could be saved thereby the helper was sent to the machine for the proper size and length of threaded and reamed conduit. Two home-made benders with cast steel forms, using a jack for power, shaped all the large pipe. The smaller sizes were bent in wheels and bending forms, and, of course, the ever-present "Hickey" did its share of work.

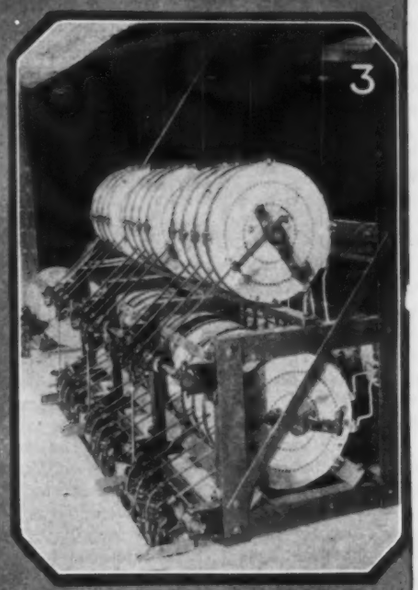
A much advertised panel box cutter did great service. The holes of the conduit entering the gutters and externally operated switches, and for the cast iron shells of the oil circuit breakers, were cut with this tool. A close watch was kept on cutters and dies to make sure they were sharpened regularly or discarded as soon as worn enough to slow up work or tear threads.

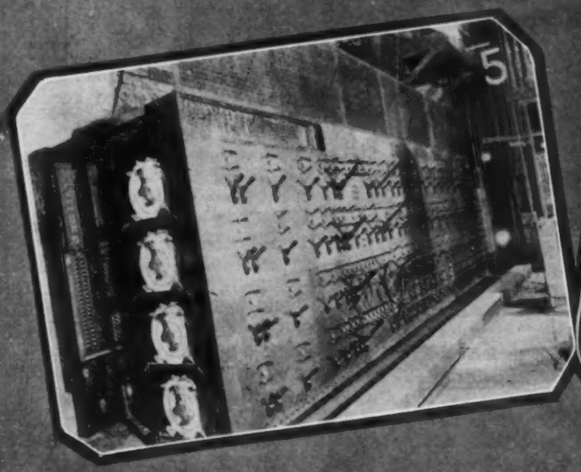
This work has been designed and was constructed under the direction and with the co-operation of the officials of the railway company by The Sydney E. Junkins Company, Limited, of which A. D. Wilder is chief engineer and L. E. Dunham, electrical engineer.

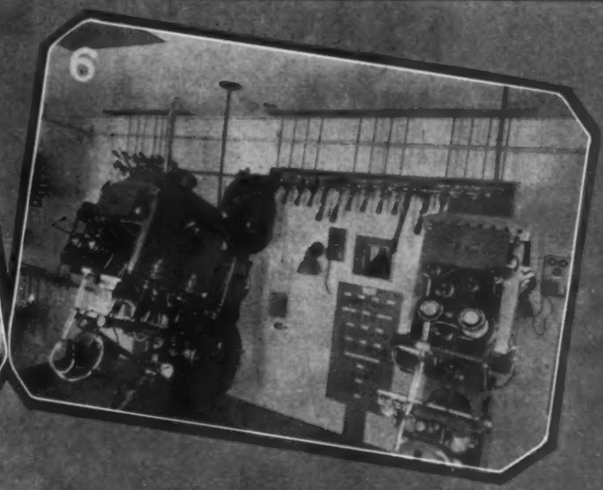


### *Theatres Utilize Late Equipment*

NEW theatres in Oakland and Los Angeles have made use of the most modern electrical stage equipment. (1) The Grand Lake, in Oakland and (2) its elaborate sign. (3) Dimmer banks located above (6) projection booths in (4) The Senator, Oakland. Stage and house lights are controlled from either booth or stage. (5) The world's largest stage switchboard, at the new Shrine civic auditorium in Los Angeles. (A short description of the Oakland West Coast theatres appears on page 36.)





# Engineering Practice

## Methods for the Determination of Electrolysis Effects

### Procedures Are Suggested for the Measurement of Potential Between Cable Sheath and Earth and for Direct Measurement of Sheath-Current Leakage

By B. A. WILLIAMSON, Electrical Engineer, Los Angeles Gas & Electric Corporation, Los Angeles.

If there be any approved method of making direct quantitative measurement of electrolysis on lead sheaths the author has been unable to discover it in technical literature.

An engineer need not be embarrassed to confess a certain ignorance of his subject, providing it is done to secure information. This admission is made in part when he subscribes to engineering publications and affiliates himself with technical societies. Unfortunately there seems to be but little that may be learned from these sources regarding the corrosion of lead sheaths, though there is considerable attention given to underground pipe systems. This probably means that electrical men have been showing less interest in a common problem of an electrical character than have pipe engineers. It would seem that familiarity has induced the two undesirable mental states of indifference and over-confidence.

#### An Illustration

In previous years electric-light poles were replaced without great consideration being given to their comparatively short life unless perhaps to state simply that the poles were worm-eaten. Recently the writer had the pleasure of hearing R. E. Cunningham, operating engineer of the Southern California Edison Company, lead, with the presentation of a paper, the overhead committee of the P.C.E.A. in an interesting discussion concerning the preservation of pole and cross-arm construction. It appears that the worm of earlier days is an insect now known as the termite whose natural abode is in the forest and whose useful purpose is that of hastening the natural decay of dead timber both standing and fallen, thus acting as an assistant to our forest rangers. When the termite becomes a vagrant to poles he destroys them by drilling and tunneling, preferring to work just above the ground level where the strain is the greatest and where the old-time creosote treatment of pole-butt left off. Due to the valuable work of Mr. Cunningham and others the overhead engineers now are beginning to creosote the entire pole, and to wonder what is to be done about the multitude of butt-treated poles now standing with arms outsctretched to the termite.

#### The Termite of "Underground Poles"

The overhead conductors carried by these poles are beginning to go underground. This present-day tendency will go on apace as growing cities become more insistent for sightly streets and as the dwindling forest reserves dictate the necessity for it. The signs of the times are that the poles of our overhead lines of today will be replaced largely by the lead-sheathed underground conductors of tomorrow. The termite of these "new poles" is the so-called electrolysis bug, and he is no mere bugaboo. If anyone thinks electrolysis is an imaginary ill requiring bread-pill treatment let him consider the positive action of electrolysis in its useful applications.

When cables are pulled out due to being over-loaded, after some 10 years of service, and found to be in bad condition, an engineer should be slow in ascribing the damage to soil corrosion, lest he make a mistake similar to that of classifying poles as being "worm-eaten." The author recently read of a lead pipe in good condition when removed from the ruins of a roman bath house built in the reign of the Caesars. Lead has a greater resistance than iron to the elements of the atmosphere and soil and will last almost indefiinitely, unless attacked by such external agents as ammonia or electrolysis. However it is more susceptible to the latter than is iron, in the ratio of 7 to 2.

It has been stated that lead-covered cables are not showing much electrolysis. If true, this may be attributable partly to the fact that at present the underground systems are confined largely to down-town districts of restricted areas where the railway substations are close together in consideration of the heavy traffic. It is a well-established fact that the over-all potential drop on the track and the leakage therefrom increases as does the square of the feeding distance of these substations. When underground lines of higher voltage and greater distance are built to cross both the negative and positive zones of substations of wider spacing a greater hazard may be expected. A recent report of a failure of this nature concerned an installation of two 11-kv. and a 12-pair telephone cable which were severely damaged in the very brief period of 66 days.

#### Information Sought

The author contends that the duties and difficulties of the electrolysis engineer and their importance as a rule are not taken seriously except across the hall on the gas side of the industry. Information on certain questions and discussion of two ideas now is definitely and pointedly sought.

These are offered in the way of suggestions:

**(1) The question of insulating or grounding the lead-sheaths of underground systems as a means for securing electrolysis protection.**

Some companies, particularly the telephone, isolate their cables from all other surface and sub-surface metallic conductors, except for drainage bonds that are established to the negative return of railway systems at desirable points near substations or to the negative buses thereof. Other companies cross-bond all lead sheaths to the a.c. neutrals which in turn are grounded to water pipes on the meter side of the consumer's service switch. While each method had its advantages and disadvantages as well as its proponents and opponents it is true no doubt that one is found to be preferable to the other, if all the facts are known.

**(2) The question of ammonia leaks from underground cold-storage pipe lines:**

The author has had to deal with one location in a negative zone midway between railway substations where failures have occurred from time to time on cable sheaths that tested negative in potential, or practically so, to all other known metallic structures. When the broken-down cables are pulled out during the wet season they are wet, indicating that the duct lines are not properly graded to give drainage toward manholes. These lead cables are laid in close proximity and parallel to an ammonia pipe line on which there are occasional leaks. It would appear that the cable breakdown may be attributed either to galvanic electricity or to ammonia.

**(3) The question of the extent to which the fibre conduit provides electrolysis protection:**

Some companies are beginning to use cement ducts in preference to fibre ducts. Consideration might well be given to the subject of electrolysis in making this choice. It is quite possible that the fibre, by providing a barrier of contact and of resistance between the lead sheath and the corrosive elements of soil, might mitigate against galvanic and vagrant-current electrolysis.

**(4) The question of the heating effect of a vagrant current on lead sheaths in reducing the safe load capacity of underground conductors.**

**(5) A suggestion for making potential measurements between cable sheaths and earth:**

This is one of the qualitative tests to determine in preliminary surveys where there are unsatisfactory conditions and dangerous areas. Other tests are voltage readings between the sheaths and other metallic conductors such as railway tracks and pipe systems. The latter may be taken accurately with an ordinary voltmeter. The cable-to-earth potential measurement involves polarization and resistance factors of an electrolytic cell which, if ignored, result in errors of appreciable magnitude.

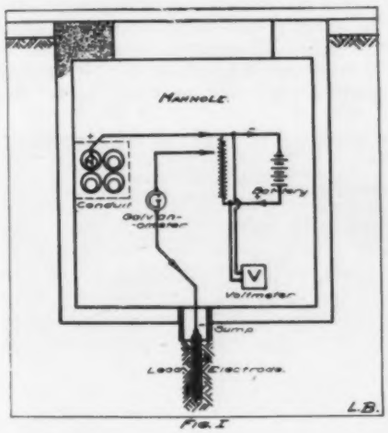



Fig. 1. Proposed method of making voltage measurement between cable sheath and earth.

This measurement as usually made consists of reading the voltage on a low scale, for example anything between 0.010 to 1.000 volt, of a voltmeter preferably with a resistance of from 400 to 600 ohms per volt between the cable sheath and a short piece of lead pipe driven into the sump or earth. This results in two errors, one due to polarization and the other due to soil resistance. When the voltmeter current flows, its passage between the lead electrode and earth produces a chemical change known as electrolysis and gas of one kind or another forms as a film of resistance upon the surface of the cathode or anode, as the case may be. This results in a change of potential between the electrode and the electrolyte immediately adjacent. This is called polarization and the degree in any special case is more or less proportional to the current intensity. It is apparent that this error is infinitely small, or zero, when the current has a like value.

After the voltmeter current has entered the electrolyte, or earth, it flows through a high earth-resistance circuit back to the negative bus of the railway substation. Since the deflection of the voltmeter needle is directly proportional to the impressed voltage and inversely proportional to its internal and external resistance, the indicated voltage will not be the true voltage unless the external earth resistance is zero. The earth resistance usually is greater by far than the voltmeter resistance. If $R_v$, $R_e$, represent respectively the voltmeter resistance and the earth resistance of the series circuit, and $E_t$ and $E_i$ the true voltage and indicated voltage between cable sheath and earth and where polarization is included as a resistance effect the true voltage may be expressed as follows:

$$E_t : E_i :: \frac{1}{R_v} : \frac{1}{R_v + R_e} \quad \text{whence}$$

$$E_t = E_i \left( \frac{R_v + R_e}{R_v} \right)$$

It is evident that $E_t = E_i$ only when $R_v$ is infinitely large or $R_e = 0$. It may be seen that for accurate determinations some sort of a potentiometer measurement must be used.

What are believed to be accurate measurements have been made by the author by the hook-up shown in Fig. 1. The positive potential between the cable and earth is balanced against a reversed battery potential in a slide-wire resistance. The slide-wire contact is moved until there is no deflection of galvanometer, at which time there will be no polarization or earth-resistance effect because there is no current. The cable-to-earth potential may be calculated easily from the slide-wire setting and the battery voltage. For instance, if the battery gave a potential drop of 0.01 volt per unit length of slide wire and if 50 units were required to balance the galvanometer, the setting would indicate a cable potential of 0.5 volt.

It is our opinion, however, that these sheath-to-earth potentials tests even when correctly made do not indicate the true electrolysis hazard. What really counts is current leakage and that is as much dependent upon earth resistance as upon cable-to-earth potentials. It is believed that a milliammeter measurement of current leakage per sq.ft. of contact surface between electrode and earth would be more significant.

**(6) The suggestion for making direct measurement of the leakage of current between lead sheaths and earth:**

When quantitative measurements indicate electrolysis it is necessary to have means available, as heretofore noted, to make quantitative tests. If the lead sheaths are isolated from other structures it is possible to make a differential test of this leakage by taking millivoltmeter drops over equal lengths of the same in adjacent manholes, providing the leakage between the two locations is a considerable portion of the entire current carried by the sheath. In grounded systems this method is more difficult and in any case is subject to considerable error due to the lead sheaths being of different resistances and temperatures in different manholes.

### Recording-Ammeter Method

A recording-ammeter method for making this test has been devised by the author. For the application of this method it is necessary to have an isolated length of lead cable in a separate duct. It may be a short length thrust into an empty duct or it may be an existing lead sheath between adjacent manholes, with the sheath removed and taped over for a short distance. This isolated sheath, BB′ in Fig. 2, is connected through a low-resistance recording milliammeter to another cable, AA′. If the cable is discharging current to the soil it will be because the cable has a higher potential. The intensity of such a discharge is proportional to potential differences and soil resistance. Thus the ammeter connection raises the isolated cable BB′, to the same potential as the other cable, AA′. With the soil resistance the same for each cable the current discharged will be the same for each cable. This current will be accurately measured in direction and intensity by the recording ammeter. An ordinary recording millivoltmeter may be converted into an ammeter by winding a low-resistance shunt and calibrating it with the instrument to produce a milliamp. scale. The average

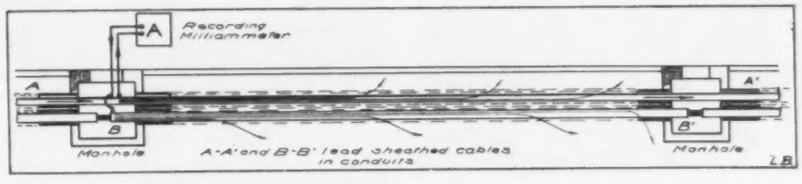



Fig. 2. Proposed method of measuring vagrant current leakage between lead cable-sheath and earth.

of two different readings should be taken, one in either manhole, to eliminate the error due to the potential drop in the solid-sheath cable, AA'.

**(7) The question of estimating electrolytic depreciation:**

Assuming that now or hereafter there may be reliable known means of measuring current leakage the next problem is to determine the loss that a given quantity of electricity will cause to the lead sheath; not in terms of pounds of lead, but in depreciation of investment. Wastage of the lead occurs at a theoretical figure of 70 lb. per amp.-year; but the effective rate in producing depreciation is much greater than this due to the pitting effect.

A lead sheath has broken down and no longer is serviceable when it has been perforated at even one pit-hole, not when the entire sheath has been eaten away. "The ratio of the initial weight of a cable, or pipe, to its loss of weight due to a vagrant current to the time of breakdown is called the factor of electrolytic concentration.* In the case of pipe the author found the value of this factor to be about 15. If this figure would hold true for lead sheath the corrosive action of a vagrant-current discharge from lead sheath to earth would not be 70 lb. of lead per amp.-year, but 70 x 15, or 1,050 lb.

This figure brings us back to the former conclusion, that electrolysis is a live issue.

* This is quoted from "A Method of Calculating Electrolysis Depreciation."—Journal of Electricity, May 15, 1925.

# Island Determines Location of River Crossing

## Novel Cable Support Provides for Take-up of Aluminum Cables Without Attendant Wear

By E. F. PEARSON, Engineer, Northwestern Electric Company, Portland, Ore.

In crossing the Williamette River at Portland, Ore., with a new 66-kv. tie line between the Albina substation and the Lincoln steam plant, the Northwestern Electric Company chose a location in the southern section of the city where Ross Island could be utilized as a location for a supporting tower near the center of the total crossing of more than 2,000 ft. The conditions were met best by three riveted structural steel towers erected on reinforced concrete foundations. The east dead-end tower is 107 ft. high, the west dead-end tower and the center supporting tower each 175 ft. high. Span lengths are respectively 1,052 ft. on the east and 1,133 ft. on the west. Minimum vertical clearance of conductors above low water in the main channel is 123 ft. as required by the War Department.

The towers are designed to carry two 3-phase circuits, though at the present time only one is installed. The dead-end towers will withstand an 11,000-lb. maximum tension per conductor, a total of 66,000 lb., in accordance with the city building code for steel structures. Only one circuit now is in service.

Each 3-phase circuit is designed for an ultimate capacity of 30,000 kva. at 66 kv. and 60 cycles. Conductors are 336,400-circ.-mil, standard steel-reinforced aluminum cables each having an elastic limit of 11,715 lb. and an ultimate breaking strength of 16,200 lb. Conductors were sagged to provide for a minimum loading of ½ in. of ice and an 8-lb. wind at 0 deg. F. They also will carry a 1½-in. radial thickness of ice at 32 deg. F. under a no-wind condition. The conductors on the longer span were strung with a sag of 35 ft. at 60 deg. F. with no ice, no wind and with a computed tension of 2,320 lb. This tension was checked with a dynamometer while stringing. Breaking links of Monel metal were installed on each conductor so that the pin would shear at the approximate elastic limit of the conductor.

In order to allow a liberal flashover safety factor, seven Locke No. 7,500 strain insulator units per string were used on the dead-end and on the center suspension strings. For mechanical strength, two strings in a parallel yoke were used to hold the dead-end strain on each conductor. Seven Locke No. 7,500 strain units per string carry the jumpers on the strain towers.

### Cable Supports

To avoid the necessity of dead-ending at he center supporting tower and to equalize the strain on both spans in either direction it was decided to permit the conductors to roll free in their suspensions at that point. Because it is not advisable to roll aluminum over a sheave wheel it was necessary to devise a support in which the conductor could be held rigidly in the vertical plane and yet be free to travel over a short distance horizontally. In the device adopted the conductor is clamped rigidly to a 4-wheel trolley which runs on the lower flanges of a 7-in. I-beam 9 ft. in length which in turn is suspended at either end from the tower by insulator strings. The I-beam is enclosed in a sheet-copper housing to protect the track and trolley against the accumulation of ice in cold weather. (See Fig. 2.)

To assist in preventing conductors falling from the supporting tower in the event of a break at or near the Monel breaking link, additional alumi-

Fig. 1. 175-ft. structural steel suspension tower. Note cable-supporting yokes on crossarms.

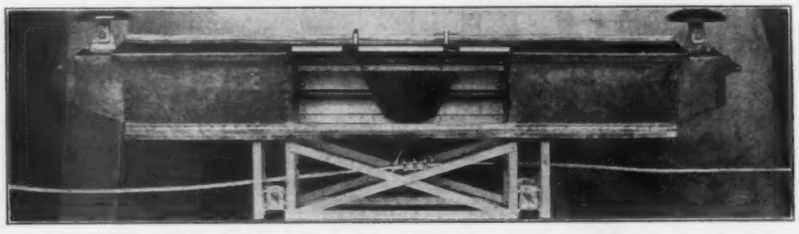
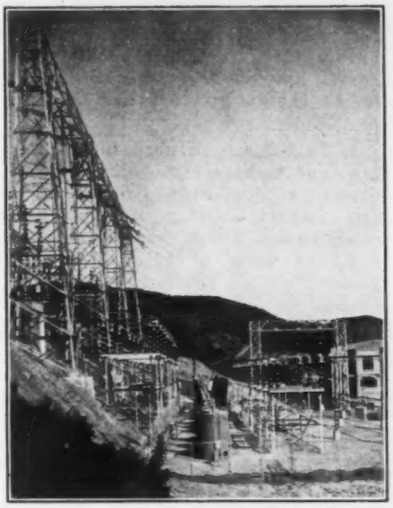


Fig. 2. Cable-supporting yoke which permits free longitudinal movement of aluminum cables without wear. Consists of a 4-wheeled trolley riding on the two lower flanges of a 9-ft. section of 7-in. I-beam. Beam supported by suspension strings at each end.

Fig. 3. View of completed Willamette crossing of Northwestern Electric Company's Lincoln-Albina 66-kv. tie line. Note arrangement of jumpers around the dead-end tower in the foreground. View looking west.

num rollers were mounted on a steel frame below the I-beam but not normally in contact with the conductor. (See Fig. 2.) In case of a break the trolley will run off the end of its track and the conductor will drop onto these rollers, running down until the tension on either side of the rollers again becomes balanced. With this arrangement it will be easy for a line crew to take hold of the conductor and again pull it up to tension. Maintenance work also is facilitated.

## *Hillside Construction*



220-kv. switch rack at Eagle Rock substation, Southern California Edison Company.

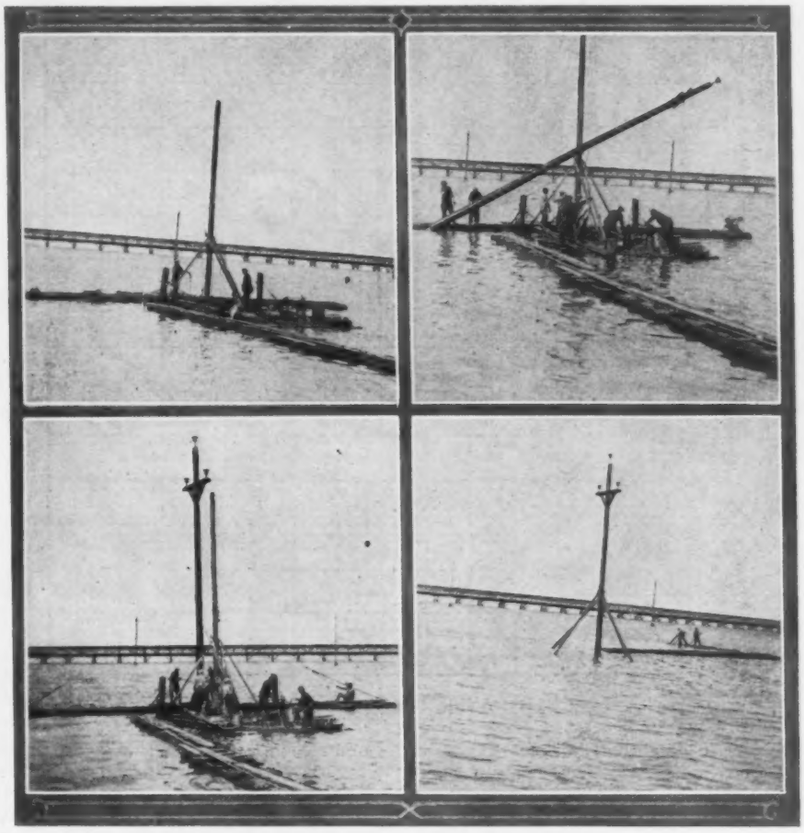
# Sea-Going 44-kv. Transmission Line Is Erected from Rafts

Steps incident to the construction of an amphibious transmission line are shown in the accompanying illustrations. The construction work shown was incidental to the rebuilding of the Saltair resort near Salt Lake City, Utah, and was undertaken by the Utah Power & Light Company to give better power service to the resort. The extension necessitated the construction of 4,500 ft. of 44-kv. transmission line, 11 poles of which were located in water which varied in depth from a few inches to as much as 5 ft.

The erection of these 11 poles presented not only the difficulties incident to setting them in water but also the difficulty of driving the pole hole through an exceedingly hard strata immediately underlying the bed of the lake. This underlying sodium sulphate strata was so hard that it was impossible even to drive piling through it. Therefore the method adopted was a combined heating and agitation method wherein the application of a steam jet so heated up the sodium sulphate that it could be partially dissolved and dislodged. The depth of the holes excavated in this manner averaged 6 ft. The characteristics of that material are such that the material settled back into and hardened in the hole within the period of a few hours so that the poles are held in place as rigidly as if set in concrete.

Rafts were used to support the steam line and also to provide a working platform from which the poles could be raised and subsequently the conductors strung. To assist in holding the raft in the proper position for the setting of a pole the forward end of the raft was raised up and placed upon two special jacks built of 9-ft. pole sections with 3-ft., 2 x 12-in. timbers bolted to the bottom to form footings. Heavy iron weights were attached to these jacks to hold them in place and to hold them upright. Poles were floated into place and raised by means of a gin pole mounted on the raft and operated by a small hoist also on the raft.

A length of No. 6 iron wire was strung along the line of the pole line and the rafts carrying the steam line were attached to this messenger wire. When it came time to pull in the line conductors this No. 6 wire was used as a pulling lead and all 3 conductors were pulled into place at one time. A truck was attached to the land end of the No. 6 wire and the 3 cable reels were mounted on the pier at the resort. Conductors were strung through running blocks as they came to the location of each pole.



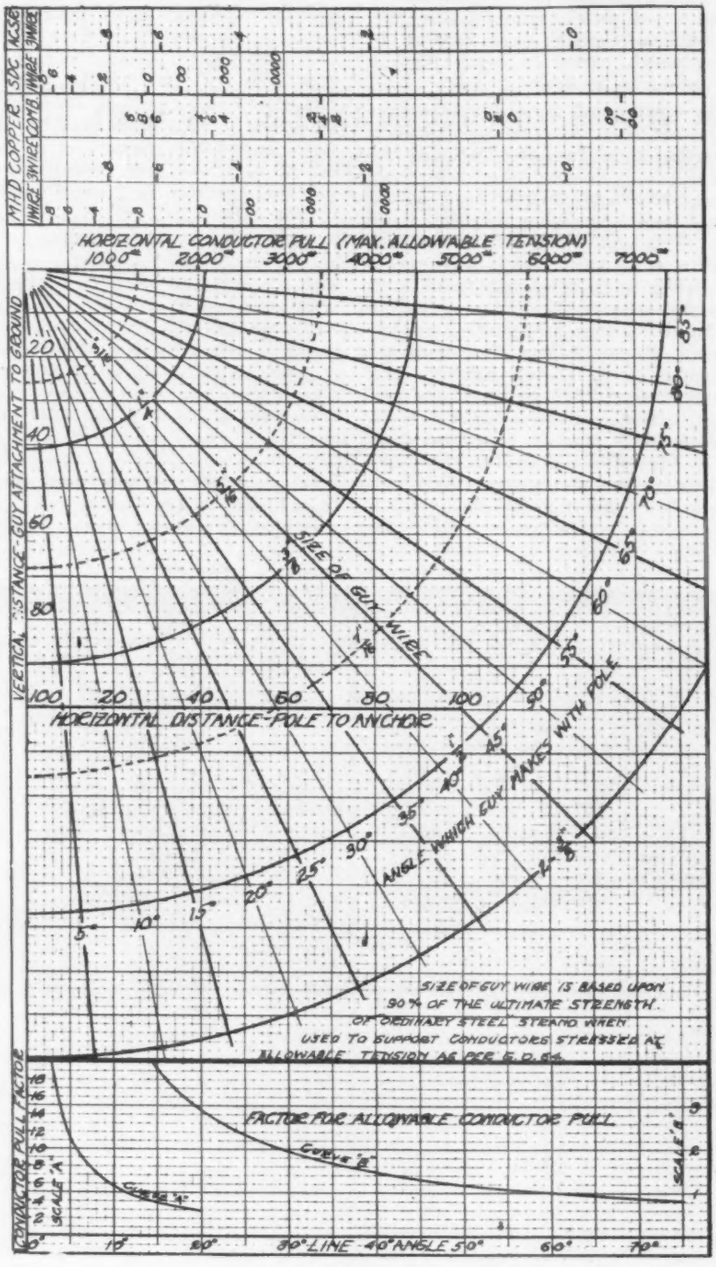
Four stages in pole-setting in Great Salt Lake.

# Chart Simplifies the Selection of Correct Pole-line Guys

By P. H. YELTON, Electrical Engineering Department, The Southern Sierras Power Company, Riverside, Calif.

A chart sufficiently comprehensive within its field and yet simple enough to appeal to the line formen and inspectors as well as to engineers is shown in the accompanying illustration. The chart was developed for inclusion in the Distribution Standards of The Southern Sierras Power Company and has served well. Before proceeding to an explanation of the application of the chart the following fundamental premises should be in mind:

Guy wire strengths as used in the chart are based upon 90 per cent of the ultimate strength of ordinary steel strand. This is a margin of safety of 10 per cent over that allowed by General Order 64 of the California Railroad Commission. Standard sizes of guy wires generally used for distribution work are ¼, ⅜ and ½-in. ordinary steel strand. For transmission work Siemens-Martin or high-strength guy strand is used. Calculations used here are based upon the application of the guy at a point directly opposite the point of conductor pull. Any great difference in elevation may be figured by proportion.




Guy chart for distribution-line construction work.

Actual guy tensions may be determined for any angle by projecting the horizontal pull down to a point of intersection with the guy-angle line. With the origin as a center and a radius equal to the distance from the origin to this point of intersection swing an arc bank up to the horizontal-conductor-pull scale and read the tension in the guy. Total guy tension due to any combination of conductor may be determined in this same way by first adding together the conductor pulls of the different combinations as shown at the top of the chart. If this total comes to a figure larger than shown on the chart a dividing factor may be used to bring the total figure down to within the chart range and then the result read from the chart may be multiplied by the factor used as a divisor, giving a correct total guy tension. Knowing the total tension and the limit of tension for any one guy, the number of guys required of course is easily determinable.

Allowable conductor stresses indicated at the top of the chart are based upon 50 per cent of the ultimate, as specified in General Order 64. This type chart could be based upon any desired conductor stress. Further, desired conductor combination may be added to the upper section of the chart.

Curves shown in the lower portion of the chart are used for the determination of the necessary guys at any line angle. Their use is explained clearly in the following:

### Instructions for use of Chart

**1. To find angle which ground guy makes with pole:** Follow horizontal line from scale "Vertical Distance Guy Attachment to Ground" to intersect vertical line from scale "Horizontal Distance Pole to Anchor." Intersection lies on radial line indicating angle.

**Example:** Assume height of guy attachment above ground is 30 ft. and anchor 43 ft. from pole. Follow horizontal line at 30 ft. to vertcial line at 43 ft.; intersection lies on radial line 55 deg.

**2. To find size of horizontal span or arm guy necessary to hold given conductors at dead-end:** From scales at top of chart, showing size of wires or combinations, follow vertical line downward to scale of "Horizontal Conductor Pull." The circular arc, indicating size of guy, which lies to right of indicated point is smallest guy which may be used.

**Example:** Take three No. 2 medium-hard-drawn bare-copper conductors. Horizontal pull = 3,900 lb. and the next circular arc to right represents a ⅜-in. guy at 4,500 lb., which is proper size.

**3. To find size of ground guy or span guy other than horizontal necessary to hold given conductors at dead-end:** Determine horizontal pull as in (2) and

follow same verticle line down until it intersects radial line indicating angle of guy. (See 1.) The circular arc, indicating guy size, lying to right of or below this point is smallest guy which can be used.

**Example:** Take three No. 2 medium-hard-drawn bare-copper conductors. Horizontal pull = 3,900 lb. Assume ground guy making vertical angle of 45 deg. with pole. Follow vertical line 3,900 lb. down to radial line 45 deg. Intersection lies outside of ⅜-in. guy arc. Therefore use next standard size, ½-in. At 60-deg. angle a ⅜-in. guy would be just sufficient.

**Note:** Standard guy strand sizes in stock (The Southern Sierras Power Company) are ¼, ⅜ and ½-in. Intermediate sizes are shown as dotted arcs. Strains exceeding strength of ½ in. strand are to be held by two or more ⅜-in. or ½-in. guys as required.

**4. To find size of horizontal or inclined guy at line angles where single anchorage bisecting the exterior line angle is used, line angle given:** Use small chart at bottom of sheet, marked "Factor for Allowable Conductor Pull." From "Line Angle" scale follow vertical line upward to intersect curve, thence follow horizontal line to "Conductor Pull Factor" scale at margin. If line angle is less than 15 deg. use curve "A" with scale "A" at left; if greater than 15 deg. use curve "B" with scale "B" at right. Divide total "Horizontal Conductor Pull" **in one direction** by this factor to obtain the resultant horizontal conductor pull exerted at the angle point by the given conductors at maximum allowable tension. With this resultant horizontal pull proceed as in (2) or (3) to find required guy size.

**Example:** Take pole carrying three No. 8 medium-hard-drawn bare-copper wires with a horizontal pull of 972 lb. and a No. 2-4-2 combination medium-hard-drawn weather-proof copper with a horizontal pull of 3,426 lb. Total horizontal conductor pull = 4,398 lb. Line angle = 30 deg.; ground guy at 40-deg. angle.

Follow vertical line at 30 deg. to intersect curve "B," thence to the right read 1.93. Divide total horizontal conductor pull, 4,398 lb., by 1.93 = 2,275 lb. Locate 2,275 lb. on "Horizontal Conductor Pull" scale at top of upper chart and follow down to intersection with 40-deg. guy angle. This intersection point falls just outside of 5/16-in. guy arc. Therefore use ⅜-in. guy strand.

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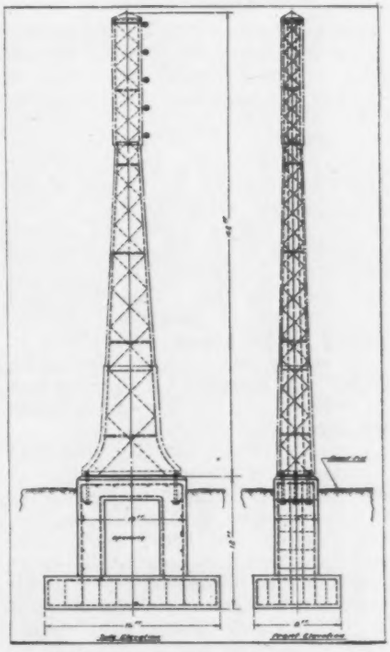
**Laying Track by Electricity.**—According to reports, a railroad in the Missouri Ozarks accomplished the laying of 130 rails, or about a half-mile of track, in one hour with a crew of only 45 men. This was possible through the use of an electrically driven machine which tears up the old rails, throws them to one side and lays the new track in place.

# Reinforced Concrete Poles for Special Purposes

Where transmission and distribution poles and similar structures are to be installed with the idea of their being as nearly permanent as possible and at the same time presenting a particularly neat appearance it is possible to use structures somewhat out of the ordinary. A reinforced concrete dead-end pole designed for use on the electrified section of Ford's D.T.& I. R.R. is shown in the accompanying illustration.

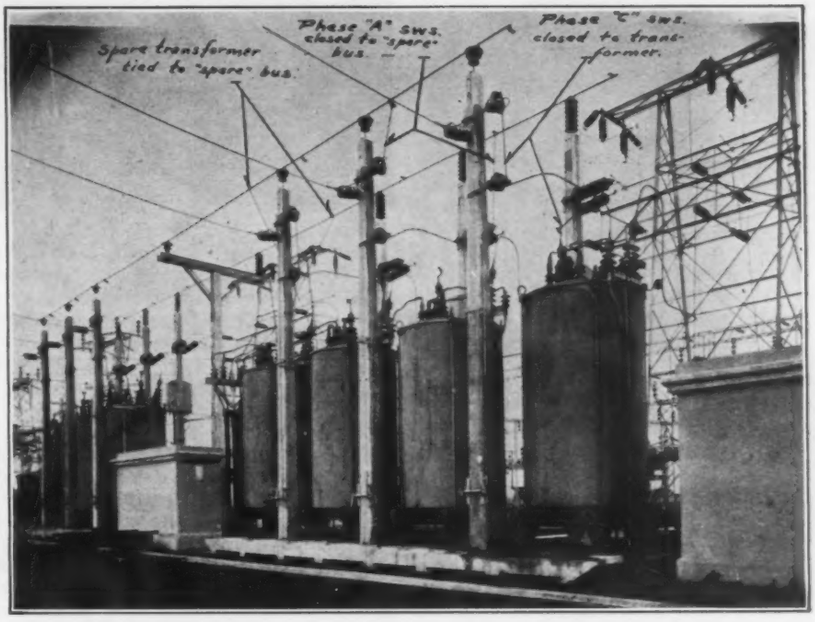
This pole is 42 ft. high above the foundation line and weighs 18 tons of which 1.75 ton is reinforcing steel. The pole contains 8 cu-yd. of concrete. The foundation is constructed as shown in the illustration, is 4x10 ft. in plan at the surface, 8 x 16 ft. at the foot, is 12 ft. deep, contains 22 yd. of concrete and weighs 46 tons of which slightly more than 2.1 tons is reinforcing steel.

This pole is designed to withstand the strain of 4 contact and 4 messenger wires having a total normal strain of 20,000 lb. in fair weather and a total maximum strain of 40,000 lb. under winter conditions. Where these poles were set along the tracks a locomotive crane was used to handle them, otherwise a special gin pole and donkey engine was required.



A reinforced-concrete pole for railway service. Such poles are economically justified where service conditions are permanent.

# *Transformer Make-Up Scheme*




A 110-kv. and 60-kv. transformer make-up bus used by the Pacific Gas and Electric Company for quickly cutting into service a spare transformer in place of any one of the six units. Post-type insulators are used on the 110 side and pin-type on the 60 side. Rotary air-break switches swinging through an angle of slightly less than 180 deg. are used for individual control of each single-phase unit except the spare, which is connected solidly to bus. In the illustration it may be noticed that the second unit in the first bank is out of service and the fourth or spare unit cut in to serve in its place. To accomplish this it is necessary to shift only the two rotary switches controlling the unit which it is desired to cut out. These switches are swung from the clips on the transformer terminals up to clips on the bus conductors. The two little concrete buildings which appear in the picture house the make-up of the tertiary winding.

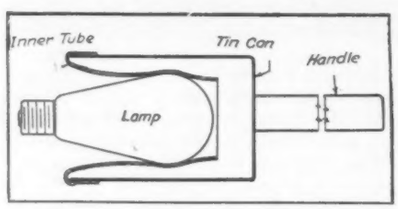
## Deer and Cold Weather Interfere with Plant Operation

Among the many difficulties complicating the operation of the El Dorado plant of the Western States Gas & Electric Company, east of Sacramento, Calif., during the first few seasons was the formation of ice at the outlet portals of the siphons. During the first winter of operation ice formed at the outlet portals, collecting and backing up into the siphon outlets and tending to retard the flow. Experiment proved that if the air at these locations was kept above 32 deg. F., the formation of ice would be prevented. Subsequently heater houses were placed at these points and electric heaters installed to maintain a temperature somewhat above freezing on cold nights and during cold weather spells.

Another serious difficulty that was encountered in the early operation of the plant was incident to the use of 23 miles of open ditch and flume line. Not only did ice, heavy snow falls, floods and landslides occasionally interfere with the operation of the open ditch, but deer persisted in falling into it. The ditch was too wide to be successfully negotiated in a jump even by a deer and the many that tried it landed in the ditch and then had to stay there until fished out. This proclivity on the part of the deer resulted in injury to many and death to some as well as in some damage to the works and the rescue parties that had to be maintained added materially to the maintenance and operation.

Bridges were installed and camouflaged in every conceivable manner, but the deer still persisted in attempting to leap the ditch and took particular pains to stay away from the bridges. The subsequent installation of a number of ladders, placed along the closed concrete lining of the ditch to provide a means of escape for the unlucky animals falling into the ditch, proved to be an unfruitful expedient. Finally the entire 5-mile concrete-lined section of the canal was fenced in carefully. This fencing accomplished the desired results by deflecting most of the animals and forcing them to cross over the bridges. Even at that every now and then a deer gets into the ditch either by jumping the fence or by crawling under it.

## *For Handling Lamps*




A handy device for removing or replacing lamps in inaccessible places. Devised by Mr. Dempsie of the Seaside, Ore., division, Pacific Power & Light Company.

# Thermocouples and their Use in Boiler Testing

### Inexpensive Equipment Rigged up on the Job Easy to Operate and Permits Study of Conditions

By C. H. HOPER, Results Engineer, Valmont plant, Public Service Company of Colorado, Boulder, Colo.

On a recent boiler test conducted on a 1,332-hp. Biglow-Hornsby boiler at the Valmont plant of the Public Service Company of Colorado, thermocouples were used for the determination of steam, water, gas, and air temperatures. A number of advantages of this system were found: readings obtained were well within the desired limits of accuracy, temperatures could be determined at just the points desired and readings were taken by two observers who were able to take other readings as well.

Several problems were encountered in working out the system used. First of all, very little printed matter on the subject was found to be available. It was necessary to determine temperatures ranging from above 2,000 deg. F. to below 3,000 deg. F. This necessitated the selection of several different combinations of alloys for the different locations. Two resistance-type instruments were on hand and because of the saving that could be effected in lead wire it was decided to locate one on each side of the boiler. This meant using the same instrument on couples of different alloys.

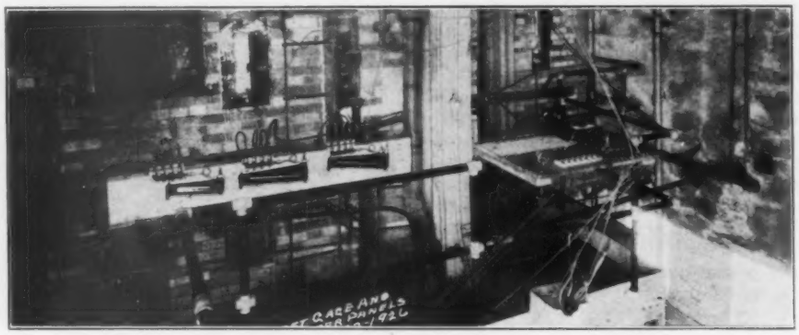


Fig. 1. Arrangement of equipment to permit the reading of several thermocouples from one station. Note the instrument and knife-switch bank at the right.

The choice of alloys for the construction of the couples was not a hard matter because there are a number of manufacturers who are prepared to assist in the correct choice of couple wire. All couples were made up at the plant with the exception of those used in the firebox. The latter were platinum couples and already were on hand. The temperature at this point exceeds 2,000 deg. F. and thus the choice of wire was somewhat limited although there are several different combinations of metals that could be used. For determining gas temperatures couple wire was selected that safely could stand 1,500 deg. F., although these temperatures varied from 1,200 deg. F. to below 500 deg. F. For the balance of the readings, which were below 700 deg. F., a third combination of alloys was selected to obtain a higher millivoltage reading for the same temperature and which would insure a more accurate result.

The wire used in making up the couples was purposely selected of a small size, No. 22 gage for all. It is known that the greater the area of the thermocouple at the hot junction the larger the error in measuring the temperature of hot gases. This is due to the radiation of heat from the hot junction which occurs for the same reason that radiant heat is absorbed by it. This is especially true where the couple is located in close proximity to the heating surface of the boiler. Iron pipe was used for all of the couples made up, the size varying from ⅛ in. to ⅜ in. depending upon the location of the couple and its length. Special porcelain insulators provided the necessary insulation of the wires within the pipe. These insulators can be purchased.

The ends of the couple wires were welded in an oxyacetlyline flame. Couple heads were made up of fibre blocks which were screwed on to the end of the pipe and fitted with terminals for the couple wires. In making up the couples the pipe at the hot junction was left open in each case. In those used for gas and air the hot junction was allowed to protrude beyond the end of the pipe to insure sensitivity and to eliminate as much as possible the error due to radiation as mentioned.

Thermocouples used for determining the temperature of steam and water were inserted in thermometer wells. Here the wire was not allowed to quite reach to the ends of the pipe. Lead was used in the well in the superheated steam line. In this case the question might arise as to what the effect would be of the molten lead on the wire, but the effect should be nil as long as all of the lead in contact with the couple wire is at the same temperature.

Before installing the couples each

one was checked at two points, the lower one in oil at 300-400 deg. F. and the upper one in lead at 600-800 deg. F. The cold-end temperature was kept at 32 deg. F. by means of an ice bath. Applying the necessary corrections the results were found to be accurate as compared with a mercury thermometer. At that time the polarity of each couple was established and the heads marked to facilitate installation.

Couples were installed without difficulty using existing openings for the purpose. Those used to measure gas temperature were inserted through inspection doors and sampling points which were installed at the time the setting was built. In the boiler section four couples were used for each location and so arranged that the average reading was a representative one, each couple being located in the center of one-fourth of the cross-sectional area. These couples were 12 ft. long and had to be suspended from the tubes by heavy iron wire.

For uptake temperature four couples were located in a horizontal line across the damper opening. Six couples were installed in wells, five in the economizer heads and one in the superheated steam header. Six couples, three on each side, were inserted in the secondary air ducts at the junction of the front and side walls The couples used in the firebox were inserted under the arch and, because of the temperature at that point, merely protruded ino the firebox.

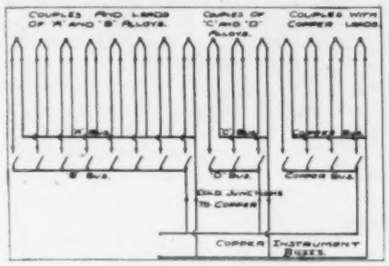



Fig. 2. Wiring diagram of thermocouple system shown in Fig. 1.

It was desired to construct a terminal board for each side of the boiler for the reason already stated. In order to avoid taking cold-junction temperatures for all couples and making the consequent cold-end corrections it was decided to maintain the cold-end temperature for all couples at 32 deg. F. The result was a board shown schematically in the wiring diagram. Baby knife switches were used to connect the instrument to any desired couple. Due to the bus system employed only one set of cold junctions was necessary for each set of couple wires. These were inserted in glass "U" tubes and immersed in ice containers. The latter were made up at the plant by taking a 5-gal. tin, placing inside of it a 1-gal. tin and packing the space between with insulating material. A pipe extending up through the cans to within several inches of the top of the inside container took care of the surplus ice water as fast as it formed.

Leads of the same metal as the couples were used to connect the couples with the instrument board, with the exception only of the couples used to measure secondary air temperature and firebox temperaure. In these cases lead wire was run 6 ft. from the sidewalls to facilitate getting the cold-end temperature. Copper then was run to the copper bus on the terminal boards. This was necessary due to the long distances from the boards.

The indicating instruments were carefully calibrated against a millivoltmeter. During the tests all of the temperature readings were taken every 15 min. To prevent injury to the instruments the desired switch was closed before the preceding circuit was opened.

After the readings were taken the instrument calibration curves were referred to and the indicated e.m.f. determined. Due to the resistance of the couple, leads and wiring on the terminal board, this indication would not be a true reading of the e.m.f., as would be the case where potentiometers were used. From the data furnished by the manufacturer of the couple wire its resistance per foot was determined and it was not difficult to go through all of the couple circuits and compute the resistances in each. Knowing the resistance of the instrument the correct e.m.f. was found by multiplying the indicated e.m.f. by the ratio of the resistance of the instrument plus the wiring to the resistance of the instrument alone. From the corrected millivoltage reading the temperature could be found by reference to the curves on the couple wire, which curves also were obtained from the wire manufacturer.

A good illustration of the accuracy of the method employed was obtained by checking the reading on steam temperature with a mercury thermometer corrected for stem immersion. The corrected couple reading was found to check within 2 deg. F. of the thermometer.

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**Railway electrification** is progressing slowly and surely, if somewhat gingerly. This latter seems to be due to a feeling on the part of railroad engineers that some form of motive power still more economical possibly may be developed within the next few years. Nothing particularly definite necessarily is in line; nevertheless electrification is being carried on rather conservatively. However, the Pennsylvania railroad is constructing 13 powerful electric locomotives. Each of these is to be equipped with four motors having a combined capacity of 3,640 hp. Each is capable of hauling a 16-car Pullman train at a speed of 75 miles an hour, or a train of 100 loaded freight cars at a speed of 35 miles per hour.

## Portable Device Speeds Checking of Meter Gear Trains

By A. KANEKEBERG, Electric Distribution Department, Public Service Company of Colorado, Denver.

A gear counter that is being used to good advantage by the electric meter department of the Public Service Company of Colorado for the checking of electric meter registers is shown in the accompanying illustration. With the exception of the motor the equipment is made up entirely of discarded meter parts. The checker enables one person to check five gear trains in the short space of two minutes, a great saving in time over that required by the old hand method. The device shown was constructed particularly for the Westinghouse AB meter, but a similar device of course can be built for other types.

A small reversible motor drives the shaft and a dial at the shaft end indicates the number of revolutions of the

Portable meter gear checking equipment that proves to be a real time saver. Double-throw switch and reversible motor facilitate rapid setting of dials.

motor. Each gear train under test meshes with a straight gear on the shaft. One kw-hr., as indicated on the registers under test, represents a definite number of motor revolutions. If a group of gear trains all of the same rating are being tested any deviation from a uniform reading at once indicates an improper gear ratio. Gear trains of different ratings may be tested at one time and the reading of each checked against the master counter.

The device represents an extremely small investment, is simple to construct and operate and effects appreciable savings in meter-checking costs.

# Ideas for the Contractor

## Equipment Sufficient for Small City in Terminal

### Los Angeles Union Terminal Recently Revamped to Care for Increased Demands Occasioned by Additional Buildings

Serving the ever increasing needs of Los Angeles, the L. A. Union Terminal Company, under the management of George A. Bigler, vice-president and general manager, has furnished a central distributing point for produce and wholesale food supplies for the past ten years. The group of buildings also houses many manufacturers of food products. In this time the growth of service rendered by the Terminal has required frequent additions to the buildings until the present group covers a ground space of some 1,250,000 sq.ft. The floor area of the buildings which vary from two to seven stories in height, totals over 2,000,000 sq.ft.

At the present time, the Terminal has seven buildings, located in the blocks bounded by Seventh and Eighth Streets on the north and south, and Central Avenue and the Pacific Electric freight yards facing Alameda Street on the west and east respectively. The airplane view will show the grouping and gives some idea of the capacity for service.

Included in the area enclosed by the buildings in the foreground of the airplane photo shown in the pictorial section, is a replica of the old-time town square brought up to date, where produce from the surrounding countryside is brought for distribution to the hucksters and vegetable men who cover the city's residential districts. Here such firms as Bishop, Javne, Daley's Chain Stores and many others are housed.

#### Increased Electrical Equipment

To serve this great food distributing center, electrical service, control and switching equipment of large capacity is required. To keep pace with the increasing load, it was recently decided to make an entirely new installation of the high and low tension switching equipment, replacing the outgrown transformers and adding new distribution units where balance of load and new conditions required.

Arthur F. Buss was selected as the electrical engineer to lay out this new work and the installation was made by Foulkes Electric Company of Los Angeles. The switchboards, several views of which are shown, were manufactured by Brown & Pengilly, Inc., of Los Angeles and San Francisco. The views of the switchboard also show a small portion of the conduit work, but give but a vague idea of the difficulties encountered and overcome in putting in the new system. The entire installation was made in the short time of four and one-half months.

Due to the great size of the area served, the distribution system is comparable to that of a moderate sized city. Three 33,000-volt transformers housed in a vault between building E1 and D1 feed the main high-tension switchboard through two sets of 500,000-circ.-mil, 5,000-volt cables. This high-tension switchboard is located in the basement of building D1. From this board 5,000-volt cables feed the bank of 4,400-volt transformers located in the underground vault between biulings C1 and D1, and the sub-high-tension boards located in other sections of the grounds. In the same room with the high-tension switchboard and facing it is the main low-tension switchboard. All service for the entire terminal centers in these two switchboards.

The main high and low-tension switchboards are made up of 7,500-volt Westinghouse oil switches, assembled in slate front, open rear boards. The high-tension board consists of 8 switches, two of which are masters, controlling 3 distribution switches each. These two groups of four are separated by a grill section, behind which are located the main disconnect and transfer switches for the incoming power company feeders. Disconnect switches for the sub-oil breakers are located at the top rear of their respective panels.

The main low-tension switchboard consists of 19 oil breakers and 5 knife switches, and is some 30 ft. in length. Main bus is of bar copper, while cables are used for the taps to the oil switches. Disconnect switches and current transformers are located at the rear of the panels and are mounted on the pipe framework that supports this board and breakers. Grill doors at the ends of the boards give access to the rear for maintenance purposes.

#### Transformers

This low-tension board is fed from three 500-kva. transformers for 220-volt, 3-phase, with four sets of 1,500,000-circ.-mil cables; three 333-kva. transformers for 440-volt, 3-phase, with two sets of 1,000,000-circ.-mil cables; one 333-kva. transformer 110-220-volt, single phase, with two sets of 750,000-circ.-mil cables. This bank of transformers, as already noted, is located in a vault under the driveway between building C1 and D1. This vault is ventilated by two 2-hp. blowers.

Through this low-tension switchboard, these transformers feed the following buildings:

Jevne section, or one-half of building C1. Building D1, which includes Bishop's factory, using approximately 1,200 hp. and fed by 4 sets of 1,000,000-circ.-mil cables on power and one set of 750,000 cir.-mil. cables on light. Buildings E1 and B1, complete.

From the high tension board, two sets of No. 1 5,000-volt cables, one for light and one for power, run 900 ft. to a two-section, sub-high-tension board and bank of transformers in the south end of building C1. This bank consists of three 150-kva. transformers for 220-volt and 440-volt, 3-phase power and one 150-kva. transformer for 110/220-volt lights. From this bank, through an 8-section low-tension switchboard one-half of building C1 and buildings B2 and C2 are fed.

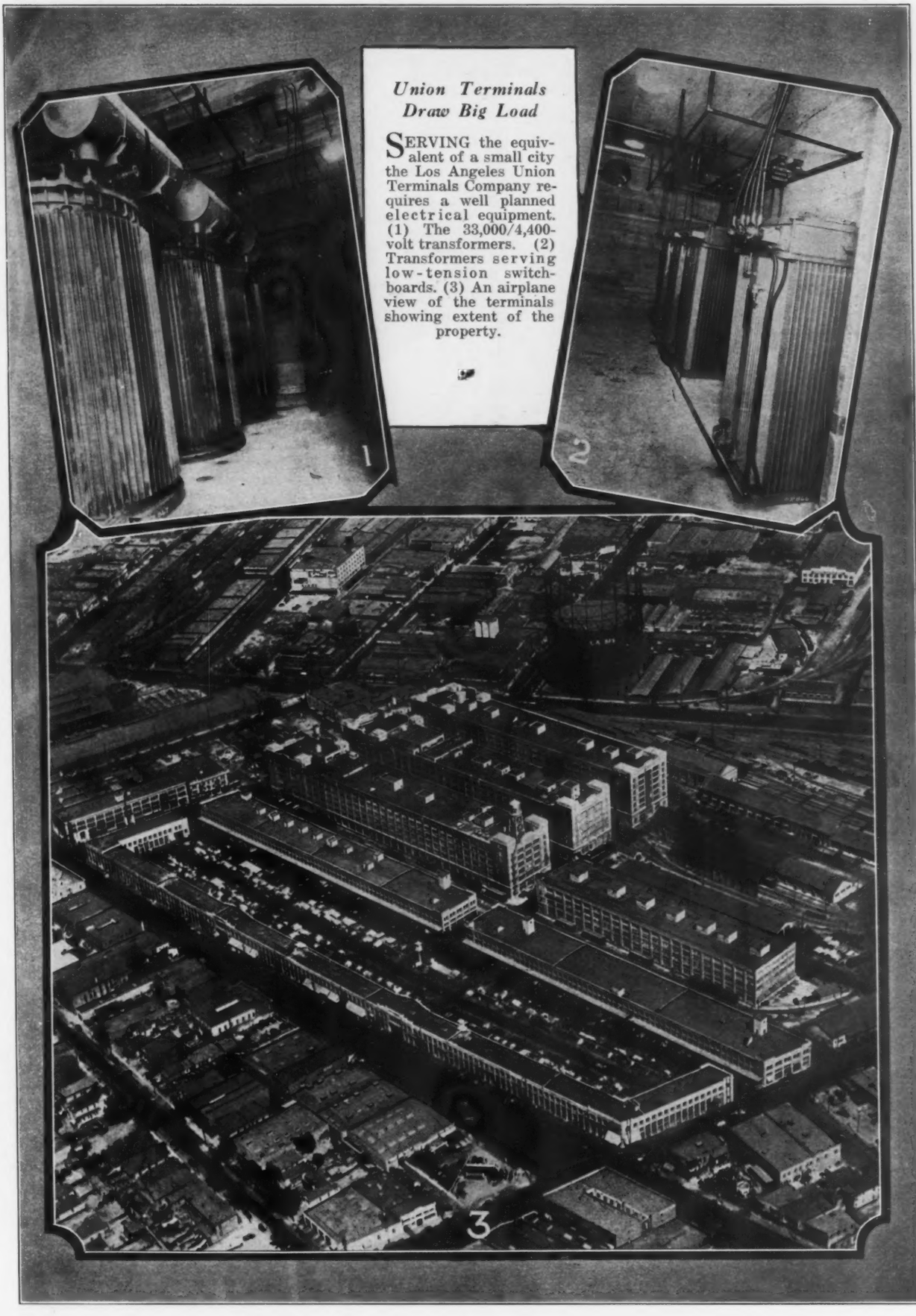
#### Pumps and Annunciators

From this low-tension board, also, a standby service is provided on 75-hp. water pumps for the sprinkler system. Normal service on the pumps is from building A.

From the main high-tension switchboard, one set of No. 4 5,000-volt cables runs underground and up to the roof of building A. This feeder is tapped by three sets of transformers. At two places, 175-kva. 110/220-volt transformers for light and 440-volt power for the sprinkler pumps are placed.

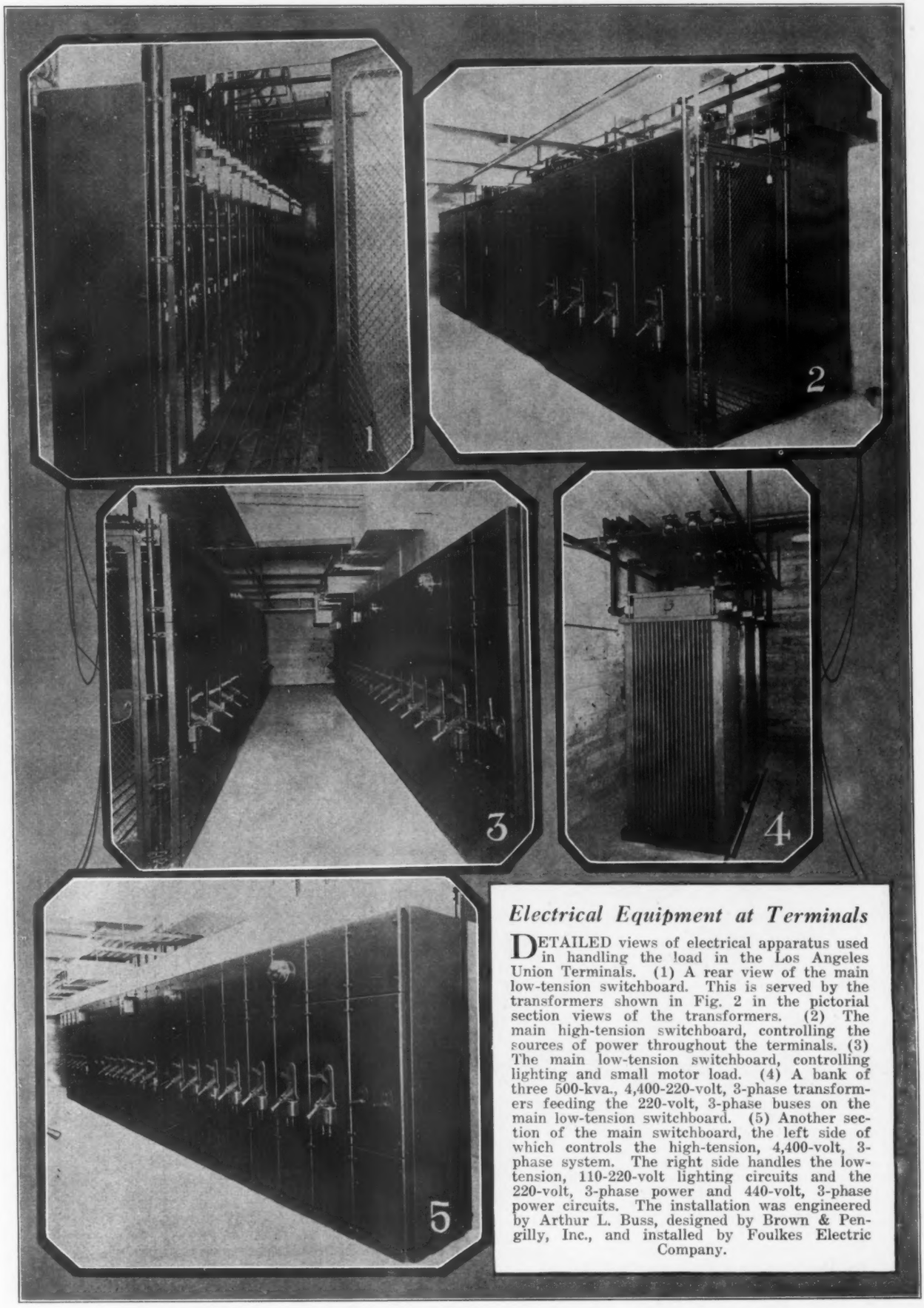
Incorporated in the boiler room subswitchboard is an annunciator that gives an alarm in case of any breaker throwing out. This enables the operator immediately to place any break in the system and makes for more perfect continuity of service.

The quality of equipment used and the attention given to details in the layout insure freedom from trouble.



### *Union Terminals Draw Big Load*

SERVING the equivalent of a small city the Los Angeles Union Terminals Company requires a well planned electrical equipment. (1) The 33,000/4,400-volt transformers. (2) Transformers serving low-tension switchboards. (3) An airplane view of the terminals showing extent of the property.




## *Electrical Equipment at Terminals*

DETAILED views of electrical apparatus used in handling the load in the Los Angeles Union Terminals. (1) A rear view of the main low-tension switchboard. This is served by the transformers shown in Fig. 2 in the pictorial section views of the transformers. (2) The main high-tension switchboard, controlling the sources of power throughout the terminals. (3) The main low-tension switchboard, controlling lighting and small motor load. (4) A bank of three 500-kva., 4,400-220-volt, 3-phase transformers feeding the 220-volt, 3-phase buses on the main low-tension switchboard. (5) Another section of the main switchboard, the left side of which controls the high-tension, 4,400-volt, 3-phase system. The right side handles the low-tension, 110-220-volt lighting circuits and the 220-volt, 3-phase power and 440-volt, 3-phase power circuits. The installation was engineered by Arthur L. Buss, designed by Brown & Pengilly, Inc., and installed by Foulkes Electric Company.

# A Year's Progress in the Red Seal Plan

### Results of California's Activity in the Adequately Wired Home Movement Summed Up for the Year 1926

Considering the fact that 1926 was practically the first year in which a concerted program for the Red Seal Plan could be said to have been under way, and that all effort on behalf of the plant must be regarded as in a virgin field, the summaries of the work accomplished are enough to justify a continued faith in the plan for the future.

Like any educational activity, the results from the Red Seal Plan will be found to be cumulative, beyond a doubt. In certain quarters, especially among builders, the idea is gaining headway rapidly and may be trusted to continue under the momentum already established. If efforts to keep the plan going follow similarly constructive lines next year the summary for 1927 will be found to justify the efforts expended to an even greater degree.

Such is the conclusion, at least, of those charged with the conduct of the plan, the California Electrical Bureau and the California Electragists. For while the quota established at the beginning of the year has not yet been achieved, tendencies in home building are felt to be swinging more to the electric idea. The actual number of Red Seal homes, it is pointed out, is not altogether a complete indication of the growth of electrification in the home. Many unreported homes which would qualify for Red Seal standards are known to have been built during the year and many more reflecting Red Seal standards in all but one or two particulars, utilizing for their operation in some cases more electrical energy than similar Red Seal homes.

#### The Kilowatt-hour Test Next Year

After all, it will be in kilowatt-hours of electrical energy that the real measurement of Red Seal efficiency must stand or fall. And in this particular the records are yet too incomplete to be reported or to give any accurate picture of the situation. Steps are to be taken during 1927 to tabulate and summarize the consumption characteristics of a number of typical Red Seal homes, according to the California Electrical Bureau. These will give a truer understanding of the actual Red Seal home operating conditions and serve as a guide to selling the Red Seal Plan in the future.

#### What the Tabulations Show

Two interesting tabulations of Red Seal statistics have been prepared by Victor W. Hartley, executive secretary, California Electrical Bureau. The first is a listing of the number of Red Seal homes built and reported upon during 1926. Since the list is arranged according to the population of the cities involved, the figures are indicative of the activity in each. The grouping by cities also shows how widespread is the ativity of the Red Seal Plan, in many instances the smaller communities producing much better showings than the larger centers of population.

The figures also may be taken as an index of the homebuilding activity in California. Those communities reflecting large numbers of Red Seal homes in the accompanying table may be recognized as those which are growing most rapidly residentially.

#### Contractors Who Sell Red Seal

A second tabulation, reproduced in connection with this article, gives the names and addresses of the 127 electrical contractors in the state who

## California Red Seal Homes

### Listed by Cities as of Nov. 30, 1926

| Dist. | Cities over 500,000 population | No. Homes |
|---|---|---|
| 21 | Los Angeles | 179 |
| 8 | San Francisco | 64 |
| | **200,000—500,000** | |
| 9 | Oakland | 30 |
| | **50,000—100,000** | |
| 23 | San Diego | 14 |
| 22 | Long Beach | 10 |
| 9 | Berkeley | 6 |
| 6 | Sacramento | 3 |
| | **25,000—50,000** | |
| 16 | Fresno | 30 |
| 10 | San Jose | 9 |
| 22 | Pasadena | 1 |
| | **10,000—20,000** | |
| 9 | Richmond | 12 |
| 22 | Glendale | 11 |
| 1 | Eureka | 4 |
| 18 | Bakersfield | 3 |
| 11 | Santa Cruz | 2 |
| 22 | Pomona | 1 |
| 25 | Riverside | 1 |
| 20 | Santa Barbara | 1 |
| 25 | San Bernardino | 1 |
| 22 | Santa Monica | 1 |
| | **5,000—10,000** | |
| 11 | Watsonville | 9 |
| 22 | Whittier | 9 |
| 13 | Modesto | 8 |
| 22 | Monrovia | 7 |
| 7 | San Rafael | 7 |
| 20 | Ventura | 7 |
| 11 | Salinas | 5 |
| 19 | San Luis Obisbo | 5 |
| 3 | Chico | 4 |
| 7 | Santa Rosa | 3 |
| 4 | Marysville | 2 |
| 25 | Ontario | 2 |
| 9 | San Leandro | 2 |
| 17 | Visalia | 2 |
| 22 | Alhambra | 1 |
| 17 | Hanford | 1 |
| 10 | Palo Alto | 1 |
| 7 | Petaluma | 1 |
| 25 | Redlands | 1 |
| | **2,500—5,000** | |
| 9 | Hayward | 16 |
| 14 | Merced | 12 |
| 19 | Santa Maria | 8 |
| 10 | Burlingame | 5 |
| 20 | Oxnard | 5 |
| 13 | Turlock | 5 |
| 17 | Porterville | 4 |
| 22 | Burbank | 3 |
| 9 | Martinez | 3 |
| 15 | Madera | 3 |
| 5 | Roseville | 3 |
| 2 | Dunsmuir | 2 |
| 7 | Mill Valley | 2 |
| 10 | Redwood City | 2 |
| 22 | Wilmington | 2 |
| 23 | Coronado | 1 |
| 16 | Dinuba | 1 |
| 22 | Downey | 1 |
| 22 | Fullerton | 1 |
| 11 | Gilroy | 1 |
| 12 | Lodi | 1 |
| 3 | Redding | 1 |
| 3 | Red Bluff | 1 |
| 22 | Redondo | 1 |
| 16 | Selma | 1 |
| 25 | Upland | 1 |
| 20 | Santa Paula | 1 |
| | **1,000—2,500** | |
| 22 | Compton | 7 |
| 22 | Claremont | 5 |
| 13 | Tracy | 5 |

| Dist. | | No. Homes |
|---|---|---|
| 18 | Corcoran | 3 |
| 10 | Gonzales | 3 |
| 23 | La Jolla | 3 |
| 23 | Oceanside | 3 |
| 17 | Exeter | 2 |
| 22 | Glendora | 2 |
| 9 | El Cerrito | 2 |
| 7 | San Anselmo | 2 |
| 22 | Tustin | 2 |
| 3 | Willows | 2 |
| 22 | Arcadia | 1 |
| 5 | Auburn | 1 |
| 9 | Cetenterville | 1 |
| 23 | Escondido | 1 |
| 16 | Fowler | 1 |
| 16 | Kingsbury | 1 |
| 22 | Lancaster | 1 |
| 23 | La Mesa | 1 |
| 10 | Los Gatos | 1 |
| 5 | Lincoln | 1 |
| 10 | Mt. View | 1 |
| 13 | Oakdale | 1 |
| 20 | Ojai | 1 |
| 19 | Pas Robles | 1 |
| 22 | Puente | 1 |
| | **Under 1,000** | |
| 18 | Kerman | 5 |
| 18 | Wasco | 4 |
| 22 | Alta Canyada | 3 |
| 23 | El Cajon | 3 |
| 16 | Mendota | 3 |
| 22 | San Marino | 3 |
| 19 | Arroyo Grande | 2 |
| 21 | Camarillo | 2 |
| 23 | Carlsbad | 2 |
| 11 | Castroville | 2 |
| 10 | Menlo Park | 2 |
| 2 | Montague | 2 |
| 19 | Morro | 2 |
| 22 | Owensmouth | 2 |
| 16 | Pinedale | 2 |
| 18 | Shafter | 2 |
| 22 | Altadena | 1 |
| 22 | Atlantic City | 1 |
| 18 | Arvin | 1 |
| 22 | Baldwin Park | 1 |
| 7 | Bayside | 1 |
| 7 | Bolinas | 1 |
| 15 | Chowchilla | 1 |
| 3 | Cottonwood | 1 |
| 18 | Delano | 1 |
| 23 | Del Mar | 1 |
| 13 | Denair | 1 |
| 25 | Elsinore | 1 |
| 13 | Escalon | 1 |
| 7 | Fairfax | 1 |
| 22 | Flintridge | 1 |
| 14 | Gustine | 1 |
| 10 | Hillsborough | 1 |
| 13 | Hughson | 1 |
| 13 | Keyes | 1 |
| 7 | Larkspur | 1 |
| 9 | Lafayette | 1 |
| 10 | Los Altos | 1 |
| 20 | Moor Park | 1 |
| 11 | Morgan Hill | 1 |
| 20 | Naples | 1 |
| 16 | Orange Cove | 1 |
| 13 | Patterson | 1 |
| 7 | Penn Grove | 1 |
| 19 | Pismo | 1 |
| 23 | Ranche Santa Fe | 1 |
| 16 | San Joaquin | 1 |
| 20 | Santa Susana | 1 |
| 9 | Saranap | 1 |
| 21 | Strawberry Park | 1 |
| 13 | Waterford | 1 |
| 3 | Westwood | 1 |

have wired Red Seal homes during the year. The number of homes each contractor has wired is also given. It must be said in passing that there are still a number of Red Seal homes under construction in the state upon which reports could not be concluded until the homes are completed. These tabulations necessarily were closed on Nov. 30, in order to be prepared for publication. Additions to both summaries for December no doubt would have added a proportionate number of new homes to the list and perhaps several more electrical contractors.

Altogether, the results for the year are hopeful results. They show that the Red Seal idea is beginning to permeate public consciousenss. As in the case of the convenience outlet campaign of the past, the ultimate results will only begin to be felt several years from now.

Meanwhile the plan is moving forward. It has gathered impetus by this year's progress. During 1927 it will grow as a snowball grows, each revolution adding almost double to its size. Therefore it will be an unfortunate and misguided, not to say almost deceased member of the electrical industry, indeed, who does not get behind the Read Seal Plan to help roll up a score for 1927 of which to be proud and boastful.

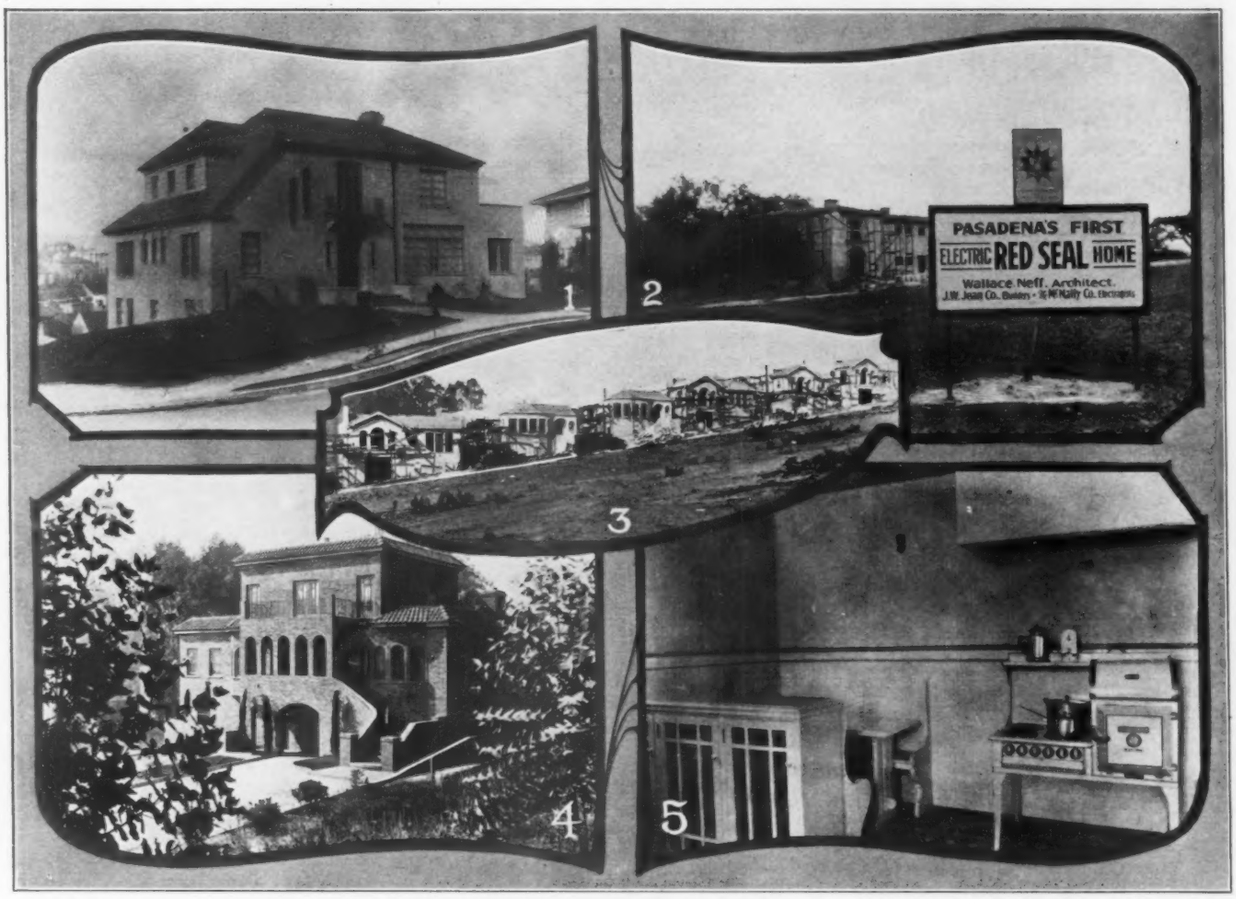
To the electrical contractor the Red Seal Plan, if it never did before, certainly holds possibilities for a greater volume of business—and a better quality of business at that—during 1927. The Red Seal job is the type of job every true craftsman wants to do. The year 1927 will be the year to do more such jobs and at better profit as a consequence.

## Will Install Flood Lights to Forestall Jail Breaks

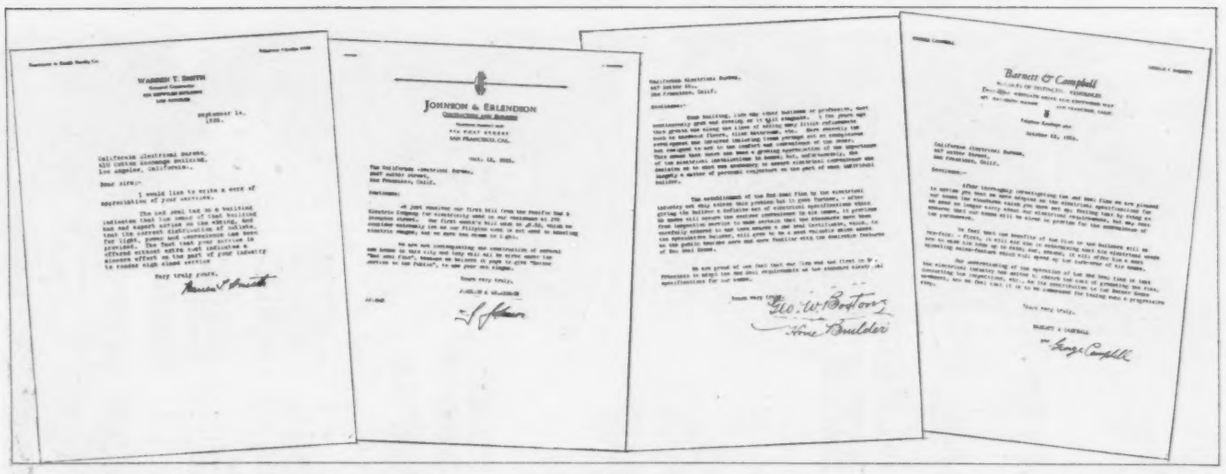
An elaborate floodlighting installation is to replace a thirty-year-old, inefficient arc light system at the county jail in Denver, Colo. According to Warden Thomas Clennan, all wiring is to be concealed so that it will be impossible for criminals to cut off the current. The projectors will be so mounted that all window ledges will be illuminated and that there will be no possibility of a shadow. These units will be controlled from any one of several strategic points.

Decision to improve conditions at the county jail was prompted by a jail break in 1924, when fifteen prisoners escaped. It was thought at the time that accomplices concealed in the yard surrounding the building passed tools to the prisoners within.

## *Home Builders Take to the Red Seal Idea*




Recent homes built in various parts of the state showing the growing interest on the part of builders in Red Seal standards. (1) Home of F. F. Porter, real estate man and builder, in Oakland. He is trying Red Seal himself. (2) Pasadena's first Red Seal home, erected by J. W. Jean Company, builders. (3) A row of Red Seal homes, part of a large tract to be all of Red Seal homes, in San Francisco, built by A. J. Herzig. (4) A builder and architect have this Red Seal home, Johnson and Erlendson of San Francisco. (5) The kitchen of these builders' homes is all that could be desired by the electrical man.



Letters received by the California Electrical Bureau from home builders, telling their enthusiasm for the Red Seal standard of electrical adequacy for the home.

# California Electrical Contractors Who Have Wired Red Seal Homes

## As of Dec. 8, 1926.

(Homes completed and reported on listed only)

| Contractor | Address and City | No. Homes |
|---|---|---|
| A. Masterton | Lafayette | 2 |
| Granger-Dacus Electric Co. | 121 W. B St., Ontario | 1 |
| Carl W. Fischer | Oxnard | 1 |
| Roy Davenport | Box 124, Los Gatos | 1 |
| Tracy Electric Co. | Tracy | 2 |
| Sullivan Electric Co. | Modesto | 1 |
| R. Barcroft & Sons | Merced | 7 |
| John E. Oust, Jr. | 641 17th St., Merced | 2 |
| Merced Hardware Co. | Merced | 1 |
| Electrical Construction Co. | 1019 Kutner, Fresno | 4 |
| Figarden Electrical Shop | Fresno | 1 |
| Wessell Electric Co. | 4751 Balch Ave., Fresno | 2 |
| Curry Electric Co. | Dinuba | 1 |
| S. C. Ramage | 1851 Lewis St., Fresno | 2 |
| Lynn Bates | 203 Franklin Ave., Fresno | 1 |
| H. J. Le Roux | 508 Van Ness Ave., Fresno | 1 |
| C. E. Milhollen | 1249 N. Calaveras, Fresno | 1 |
| Bauer & Baugh | Petaluma | 2 |
| I. N. Scammell | Montague | 1 |
| Geo. Johnson | Yuba City | 1 |
| Geo. W. Roberts | Marysville | 1 |
| Franklin Electric Co. | Roseville | 1 |
| Kent Electric Co. | 240 Third St., San Francisco | 1 |
| F. H. Tattenham | 299 Richland Ave., San Francisco | 2 |
| Morgan Electric Co. | 1102 E. 14th St., San Leandro | 2 |
| Guilbert Bros. | 276 W. Santa Clara St., San Jose | 2 |
| M. E. Ryan | 231 Main St., Redwood City | 1 |
| Just Rite Electric Co. | 21 Wall St., Watsonville | 4 |
| Independent Electric Co. | 523 Main St., Watsonville | 2 |
| Chas. Sephton | 165 Martin St., Gilroy | 1 |
| C. A. Wille | 1621 Achor Court, Modesto | 1 |
| E. A. Taggard | 608 16th St., Modesto | 1 |
| H. S. Arnold | Patterson | 1 |
| N. J. Tilghman | Modesto | 1 |
| Hunt & Foster | 721 Vermont Ave., Turlock | 6 |
| Moran & McWhinnie | Hermosa Beach | 1 |
| Lodi Electric Works | 21 S. School St., Lodi | 1 |
| A. R. Parsons & Co. | Porterville | 1 |
| Safety Electric Works | Menlo Park | 1 |
| A. W. Grimmenstein | 234 Main St., Redwood City | 1 |
| Mott Electric Co. | 109 Elm Ave., Long Beach | 2 |
| Kuster-Wetzel Electric Co. | 214 E. Broadway, Long Beach | 2 |
| The McNally Co. | 106 W. Colorado, Pasadena | 2 |
| H. H. Walker | 1323 Venice Blvd., Los Angeles | 1 |
| Unger Electric Co. | 1045 Mission St., San Francisco | 1 |
| Bird Electric Co. | 309 Main St., Chico | 2 |
| Pinedale Electric Co. | Pinedale | 2 |
| A. A. Johnstone | 5080 Montecito, Fresno | 2 |
| Visalia Electric Works | 123 W. Main St., Visalia | 2 |
| Exeter Electric Co. | Exeter | 2 |
| G. D. Prather | Wasco | 1 |
| Max Klinder | 1513 18th St., Bakersfield | 1 |
| Cline's Electric Shop | 986 Monterey St., San Luis Obispo | 1 |
| Mactolf-Doll Electric Co. | 1109 S. Brand Blvd., Glendale | 1 |
| J. A. Newton Electric Co. | 154 S. Brand Blvd., Glendale | 1 |
| J. L. Mitchell | Oxnard | 1 |
| J. W. Lane Electric Co. | 201 E. Third St., Long Beach | 2 |
| J. J. Farley Electric Co. | Fullerton | 1 |
| Russell Electric Co. | Redlands | 1 |
| Orosi Electric Works | Orosi | 1 |
| H. R. Eklund | San Rafael | 4 |
| F. P. Vandergriff | 1921 Second St., Selma | 1 |
| F. B. Fair | San Joaquin | 1 |
| Max Schultz | Kerman | 1 |

| Contractor. | Address and City | No. Homes |
|---|---|---|
| Jackson Electric Shop | 414 S. Myrtle Ave., Monrovia | 1 |
| Dowd-Seid Electric Co. | 2369 Mission St., San Francisco | 1 |
| Wm. F. Coulson | San Francisco | 4 |
| Southern Electrical Co. | Third and E Sts., San Diego | 1 |
| Doran's Electric Shop | 7515 Sunset Ave., Hollywood | 1 |
| Enoch Jackson | 2942 Virginia Road, Los Angeles | 1 |
| R. A. Gerrish | Mill Valley | 1 |
| J. H. Maurer | Shafter | 1 |
| Robertson Electric Corp. | Santa Ana | 2 |
| Monrovia Electric Shop | 148 E. Orange, Monrovia | 2 |
| L. J. Poez | Salinas | 3 |
| Hartman Electric Co. | 4733 E. 14th St., Oakland | 3 |
| Wood-Watkins Electric Co. | Porterville | 1 |
| A. R. Parsons | Porterville | 1 |
| P. H. Needham | 116 Speedway Drive, Beverly Hills | 1 |
| R. M. Fry | 247 N. Western Ave., Los Angeles | 1 |
| Chas. M. Sickles | 519 C St., Oxnard | 3 |
| Conklin Electric Co. | 926 Main St., Ventura | 3 |
| M. L. Fawcett | 2327 E. North Park Ave., Ventura | 1 |
| Frank O. Sheldon | Porterville | 1 |
| Coast Electric Service | 1022 S. First St., San Jose | 2 |
| H. M. Anderson | 402 N. Brand Blvd., Glendale | 1 |
| B & H Electric Co. | 12 Moss Ave., Oakland | 1 |
| Reseda Electric Shop | Reseda | 1 |
| Better Service Electric Co. | 1042 S. Western Ave., Los Angeles | 1 |
| Chas. T. Mitchell | 1836 E. First St., Long Beach | 4 |
| Chas. H. Johnson | 4639 La Mirada, Los Angeles | 1 |
| Rush Dolson | 314 Third St., Eureka | 1 |
| C. C. McVay | 392 Third Ave., Chula Vista | 1 |
| Pacific Electric Manufacturing Co. | 1114 McDonald Ave., Richmond | 1 |
| Hugo Frank | 586 Castro St., Hayward | 8 |
| Hayward Electric Co. | 501 Castro St., Hayward | 8 |
| Bishop Electric Co. | Corcoran | 2 |
| Stolper Electric Shop | 114 E. San Fernando, Burbank | 1 |
| L. E. Stiers | Compton | 1 |
| Kenyon Electric Co. | 526 13th St., Oakland | 1 |
| Commercial Electric Co. | 5934 San Pablo Ave., Oakland | 1 |
| Omega Lighting Supply Co. | 1235 E. 12th St., Oakland | 1 |
| Electrical Equipment & Repair | 140 E. 14th St., Oakland | 3 |
| C. H. Messner | 7923 Girard St., La Jolla | 1 |
| Gaines Electric Co. | 3753 Herbert St., San Diego | 1 |
| National Electric Co. | Roseville | 3 |
| Crescent Electric Co. | 1608 S. Ardmore, Los Angeles | 1 |
| Thos. F. Marshall | 1655 Highland Ave., Los Angeles | 5 |
| M. Schimetschek | 526 Hayes St., San Francisco | 5 |
| Curtis Hess | 1242 Van Ness Ave., Fresno | 1 |
| H. R. Arendo | Tulare | 1 |
| Thackery's Electric Shop | 628 Main St., Red Bluff | 1 |
| W. A. James | 411½ Fourth St., San Rafael | 1 |
| L. Stinchfield | Martinez | 3 |
| California Electrical Const. | 275 12th St., Oakland | 2 |
| McDonald's Electric Shop | 212 San Pablo Ave., El Cerito | 2 |
| Bay Electric Co. | 574 20th St., Oakland | 1 |
| Electric Service Co. | Salinas | 1 |
| Salinas Electric Works | Salinas | 1 |
| R. A. Creath | Morro Bay | 2 |
| Paso Robles Electric Shop | 1330 Spring St., Paso Robles | 1 |
| L. A. Drake | Santa Rosa | 2 |
| Richmond Electric Co. | 151 26th Ave., San Francisco | 1 |
| Turney's Electric Shop | Arroyo Grande | 1 |
| Paige Electric Co. | 361 E St., San Bernardino | 1 |
| D. R. Crane | Box A, Elsinore | 1 |
| Valley Electric Works | Merced | 1 |

Demonstrating the home electrical by means of this residence, the Red Seal Plan was given a good start in San Rafael, Calif.

# Breaking Through Price Competition with Red Seal

## The Story of Harry Eklund, San Rafael Contractor, Who Has Converted Twelve out of Sixteen Jobs to Greater Electrification

Once in a blue moon someone performs the impossible. Surprisingly enough he performs it very simply and neatly and everyone wonders why it was never thought of before.

In the case of the Red Seal home idea "the impossible" has always worn the false whiskers of "all we want is an ordinary, cheap wiring job. How little can you do it for?" To strip the disguise from "the impossible" required courage and not a little keenness of eyesight. With its make-up on "the impossible" looked too formidable for an ordinary contractor to tackle. Many even feared to look it in the face to see whether or not there was so much to be frightened at in this gruff voice and heavy underbrush.

Yet when Harry Ecklund, Electragist of San Rafael, looked carefully at this so-called "impossible," he saw underneath the wig a bald, vulnerable spot. Pretending all the while to accept "the impossible" at face value, he closed in on it and soon stripped this same impossible of all its impossibilities, to the amazement of himself as well as everyone else.

Which is all by way of allegory for the quite simple, effective method Mr. Ecklund developed in transforming ordinary wiring jobs into Red Seal homes **after** he had them in his grip. The word "after" is used deliberately and with malice aforethought, for it describes in one syllable just what transpired with twelve out of sixteen home wiring contracts in San Rafael.

H. R. EKLUND
San Rafael contractor who bids for house wiring in competition and then tries to convert the owner to Red Seal afterwards.

Perhaps there are electrical contractors who have more Red Seal homes to their credit on the list given elsewhere in these pages. Perhaps even the method employed by Mr. Ecklund is now common practice and hence nothing to enthuse over. Yet the fact remains that his method is a good method, a simple method and moreover one that works. To its credit may be added one more virtue, its most important in many respects. It brings Red Seal homes out of houses that were thought to be lost to electrification, hopeless and out of the running.

The method, in a few words, is as follows: Where contracts for wiring of homes are tied up and sealed by general contractor or achitect and are tossed ruthlessly into the ring of competition on price alone, Mr. Ecklund does as do the Romans. He bids competitively. He bids to get the job, as do all his fellow contractors. Sometimes he gets the job and sometimes the other chap gets it, as jobs have a way of going upon such a basis.

But if he does get the job, then the fun begins. Mr. Ecklund is not the kind of chap who lets well enough alone. The line of least resistance

would be to do the job as quickly and as cheaply as possible and forget the loss. That line has never interested this contractor. The acceptance of his bid is just the beginning of his selling activity.

### Just the Start of a Good Time

As the accepted electrical contractor for a given job Mr. Ecklund then contacts the owner of the house to be built. He assures him of a first-class job under the terms of his contract but points out to him diplomatically that he will be far better satisfied if he puts in enough electrical convenience to assure him comfort and pleasure in living in the house after it is built. He discusses the owner's ideas of furniture arrangement and decoration. He tells the advantages of electric cooking and heating, and before he finally accepts what fate has awarded him in open competition as the maximum he puts up a strong selling offensive.

### And Earned Himself a Profit

The result in Red Seal statistics is that he has been able to convert twelve out of sixteen home wiring jobs to Red Seal homes and in each of the other four has added a little to the electrical convenience of the home even if he could not make it Red Seal.

Statistics always finish off a discourse of this sort with just the right touch of realism. Actual figures clinch the nails on the underside of the board. In this case the actual figures on six of the sixteen jobs converted by Harry Ecklund to Red Seal are furnished by this evangelist of home wiring. Each set of figures tells a story that words cannot express. The "net profit gain" item alone speaks a language which every contractor loves to hear but hears too infrequently for his own good health, very often.

Let them tell their own story and conclude this discourse in the manner it deserves, with reality and conviction:

**JOB No. 1**

On a basis of 33⅓% overhead, 10% net, 76% added to previous cost.

**Original Figure $72.00.**

| | |
|---|---|
| Prime cost | $ 40.80 |
| Overhead | 24.00 |
| Net profit | 7.20 |
| | $ 72.00 |

**Red Seal Job $194.00.**

| | |
|---|---|
| Prime cost | $128.04 |
| Overhead | 46.56 |
| Net profit | 19.40 |
| Approx. 300% net profit gain. | $194.00 |

**JOB No. 2.**

**Original Figure $104.00.**

| | |
|---|---|
| Prime cost | $ 68.64 |
| Overhead | 24.96 |
| Net profit | 10.40 |
| | $104.00 |

**Red Seal Figure $525.00.**

| | |
|---|---|
| Prime cost | $346.70 |
| Overhead | 125.80 |
| Net prolt | 52.50 |
| Approx. 500% net profit gain. (This job resulted in the sale of an air heater.) | $525.00 |

**JOB No. 3.**

**Original Figure $56.00.**

| | |
|---|---|
| Prime cost | $ 36.96 |
| Overhead | 13.44 |
| Net profit | 5.60 |
| | $ 56.00 |

**Red Seal Figure $160.00.**

| | |
|---|---|
| Prime cost | $105.60 |
| Overhead | 38.40 |
| Net profit | 16.00 |
| Approx. 300% net profit gain. | $160.00 |

**JOB No. 4.**

**Original Figure $87.00.**

| | |
|---|---|
| Prime cost | $ 57.42 |
| Overhead | 20.88 |
| Net profit | 8.70 |
| | $ 87.00 |

**Red Seal Figure $178.00.**

| | |
|---|---|
| Prime cost | $117.48 |
| Overhead | 42.72 |
| Net profit | 17.80 |
| Approx. 200% net profit gain. | $178.00 |

**JOB No. 5.**

**Original Figure $127.00.**

| | |
|---|---|
| Prime cost | $ 83.82 |
| Overhead | 30.48 |
| Net profit | 12.70 |
| | $127.00 |

**Red Seal Figure $271.00.**

| | |
|---|---|
| Prime cost | $178.86 |
| Overhead | 65.04 |
| Net profit | 27.10 |
| | $271.00 |

**JOB No. 6.**

**Original Figure $140.00.**

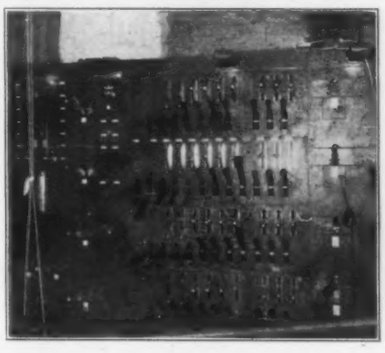
| | |
|---|---|
| Complete job, including wiring, range, water heater, air heater, electric refrigeration (but no fixtures) | $2,200.00 |

## Oakland Theatres Embody New Lighting Control Equipment

Gone are the nickelodeon days when the neighborhood theatre was housed in a vacant store and though he knew it not, the spectator of moving pictures took his life in his hands to view and be thrilled by what he saw on the silver screen. New neighborhood theatres, these days, vie with the downtown theatres for patronage and as a consequence are as well equipped mechanically to give the atmosphere necessary for good entertainment programs.

The Senator and Grand Lake theatres, two of the West Coast chain of theatres in Oakland, built recently, give evidence of this new situation. The Grand Lake Theatre, situated near Lake Merritt, is brilliantly floodlighted in magenta and green from a number of concealed 500-watt floodlights located three and four rows deep about the facade. The green lights are set in nine niches about the building. A huge roof sign may be seen for miles.

The Senator, located on a main thoroughfare to Berkeley, is no less attractive in exterior lighting. Both theatres combine, in slightly different arrangement, complete light and mechanical control from both stage and projection booth. As may be seen in Fig. 6, page 21, panels are located between projectors and allow control from three stations in the booth. With pilot lights to indicate every situation, from these panels may be controlled the front curtain, the title curtain, stage signals, the starting and stopping simultaneously of any projector and the dousing of one at the start of the other, masters for red, blue and amber house lights in cove, fixtures, organ grille, procenium arch, front border and footlights. The dimming of house lights or footlights may be accomplished from either stage or booth.



Stage switchboard of the Senator Theatre, Oakland. Front curtain, title curtain, foot and first border lights of the stage are also controllable from the projection room.

Dimmer plates are ingeniously placed above the ceiling of the projection booth so that control handles in the front of the booth may have direct mechanical application to the dimmers above. A master switch panel controlling house and booth lights and power is located at one side of the booth, with the contactors for the dimmer circuits and the motor generator set for direct current supply to the projector lamp-houses, in a convenient adjoining room. A power panel controlling the generator, the ventilating fans, and signs outside, is also located in this room.

Panels and controls were designed and built by Safety Electric Products Company of Los Angeles with Ward Leonard dimmers. Installations in both theatres were done by Harry Webber of Los Angeles.

# Possibilities for Contractors in Electric Heat

## A Consideration of the Field for and the Multitude of Uses and Applications of Electric Heat in Modern Industry

By J. R. WILSON*, Quality Electric Works, Los Angeles.

*Electrical Estimating Series—XIX*

The electrical contractor very seldom can hope to sell large electric furnaces, ovens, etc., directly to the customer without sales help from the manufacturer of this apparatus. Because of the amount of money to be invested it is usually necessary to present a great deal of actual authentic data of operating costs to convince the prospect of the desirability of making the investment. Also the prospective customer may wish to make arrangements for some means of making time payments, a matter which should be handled directly by the manufacturer. The contractor, however, is justly entitled to a commission for interesting the prospect (if the sale is made), and very few manufacturers of electric heating equipment fail to recognize an obligation of this nature.

The contractor is also entitled to the wiring job required to make the installation, a fact which the equipment manufacturer usually does not hesitate to admit. The current demand of most of the larger types of furnaces and ovens is usually quite large and it requires a considerable investment in wiring materials to equip them properly. The sale of the smaller types of electric heating equipment, and the application of "unit" type of heating equipment to apparatus already installed in the prospect's plant, can all very readily be handled by the contractor (without aid from the manufacturer) provided he will devote a short period of study to the possibilities of electric heat.

It will be a paying investment also to devote considerable study to the names and operation of the major types of machinery used in manufacturing processes. You can interest your prospect much more readily if you are able to speak of his machines by their correct names and to talk intelligently of the usual cycle of operations used in his business. This seems to offset his usual lack of knowledge of electrical phraseology.

### Scope of the Field

Application of electric heat to manufacturing processes offers a very fruitful field to the electrical contractor engaged in making industrial installations. Manufacturers are seeking constantly to improve their products and to effect economy in production costs. Any manufacturing process which requires a source of heat offers an opportunity to the wide-awake estimator.

In seeking to interest a prospect who is at present using other means of heating it is of paramount importance that the estimator be able to present figures based upon results obtained by others in the prospect's field of manufacture. The large electrical manufacturers have been engaged in collecting data pertaining to electric heat applications for the past several years and are eager to supply this information to any one interested.

The electrical estimator who has had no experience in the field of electrical heating may hesitate to engage in this field because of a fear that he will be unable to fulfill the predictions he may make of increased quality of product and economy in production costs. To this man a consideration of the results already obtained in the almost unlimited applications of electric heat may serve to allay any doubts as to its possibilities. It is safe to say that any product is improved when produced by electric heat.

* All rights reserved by the author.

### *Growth of Electric Heating*

**THE use of electric heat in industry has advanced far beyond the experimental stage, a fact which is attested by the thousands of applications which have been in continuous operation for the past several years. The number of new devices making use of this form of heat is being augmented each year, and the field of possible application is apparently unlimited. The information contained herein is presented as an incentive to induce further study of a very interesting and profitable branch of electrical application. It seems best to present some general information regarding results already obtained in the field, and then to give brief descriptions of the different types of apparatus available for use.**

One large electrical manufacturer says in part:

**"When treated with electric heat, gears are stronger, bath tubs smoother, and lenses clearer; bottles are less likely to break, copper wire is more ductile, and sheet brass is more uniformly soft and free from scale. These sales-making characteristics are the unvarying results of even heat, perfectly controlled and accurately adjusted throughout any required range of temperature-advantages and are certain to be secured only where electricity is used for this purpose."**

These statements are based undoubtedly upon first hand information obtained by this company's engineers through actual operation tests made in the field. A study of these statements should serve to point to not alone the vast and diversified field of possible application, but also the tangible results already obtained. Applications of electric heat upon a constantly increasing scale of magnitude are each day becoming more common. This has come about through the fact that central stations are beginning to realize the desirability of this class of business. They are now establishing rates which permit operation on a basis usually more economical than gas.

### Possible Economies

If the estimator decides to enter this comparatively new field of electrical application, one fact should be borne in mind always: In surveying a plant, looking toward a possible application of electric heat, do not be discouraged if a saving in first cost of electric current, as against the cost of fuel heat, is not indicated. In manufacturing the overall cost of production is what counts. Many cases of record could be cited whereby the economies effected by electric heat greatly reduced production costs, even though the cost of electric current was considerably higher than fuel heat.

The economies effected vary with the industry being considered. In the manufacture of iron and steel parts a saving of "cleaning" labor is realized, due to the non-scaling feature of electric heat. Cases are common wherein savings of 2 to 3 cents per piece, in labor cost, have been effected by the expenditure of 1 cent's worth of electricity used in the form of electric heat. Other economies are based upon conservation of factory space, greater cleanliness, better order, lessening in labor turn-over due to lowering of shop temperature and improved working conditions. Where the estimator is in doubt as to his ability to design an efficient layout, or to convince the prospect of the desirability of electric heat, he will find the electrical manufacturers ever ready to extend the

benefit of their experience and the use of their engineering departments.

### Scope of This Article

The field is so large that volumes could be written and still all prases of the subject might not be covered. In a series such as this, the only logical method is to give brief consideration to each field of application in turn, and to advise the estimator to obtain the manufacturers' literature if he desires extended information upon any particular phase of application.

### Possibilities of Automatic Control

One of the strongest arguments for the use of electric heat lies in the absolute elimination of the human factor expressed in guesswork. By the use of pyrometers, contact-making thermometers, thermostats, time delay relays, time switches, etc., automatic control reaches a degree of accuracy almost beyond belief. The length of time during which the heat is applied can be regulated in terms of days, hours, minutes or seconds, with no necessity for dependence upon human memory.

### Quality of Product

Based upon the evidence which has been gathered and compiled by manufacturers of electrical heating equipment, it seems reasonable to believe that improvement in quality of product is confined to no particular field of manufacture. In support of this belief, it is of interest to cite several cases of authentic record.

CASE No. 1

A manufacturer of glass bottles installed an electric lehr. The usual allowance for breakage in bottling machines is 2 per cent. The immense difference in quality, due to the electrical annealing process, has resulted in an almost total absence of breakage.

CASE No. 2

A manufacturer of brass and copper products whose quality is dependent upon a heating process, which must be absolutely accurate and continuous over an extended period of time, has found electric heat to be the only source of heat which will meet his requirements. Rejections, due to tearing and wrinkling, caused by lack of uniformity of product, have been entirely eliminated.

CASE No. 3

A manufacturer of meat cutters has reduced rejections by 25 per cent due to the use of electric heat for hardening steel.

CASE No. 4

A manufacturer of miniature electric lamps installed an electric lehr costing $6,000 and realized a saving of $20,000 in one year.

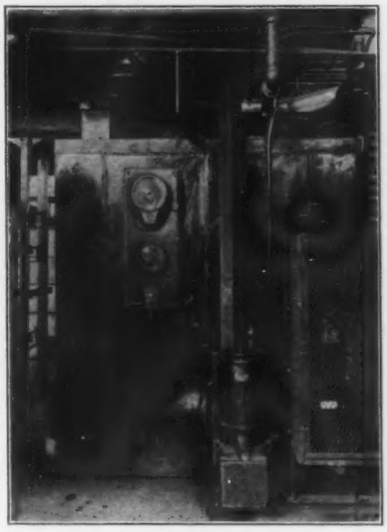
CASE No. 5

A manufacturer of automobile gears using fuel heat found it necessary to straighten 40 per cent of his gears after treatment. Since installing electric heating equipment he has no further need of this straightening machine.

CASE No. 6

A die maker reports that with the introduction of electric heat into his process the product no longer requires the reheatings that were formerly necessary.

These half-dozen typical cases may bear the ear-marks of patent medicine testimonials, but they are authentic and authorative examples taken from the files of one of the largest electrical manufacturers. Hundreds of other instances of increase in quality of product could be cited.



Electrical apparatus comprising the control equipment for an electric core baking oven.

### Economy of Space

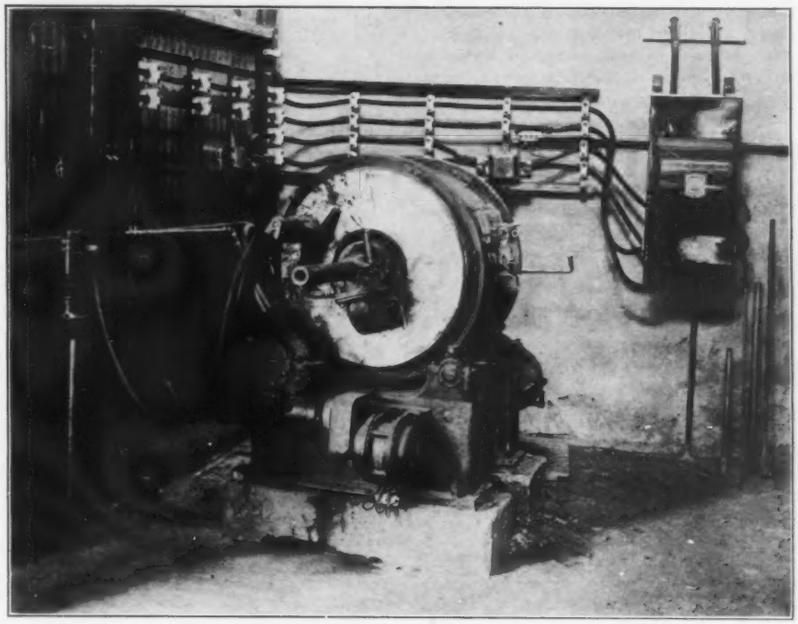
In the design of electrical equipment compactness is always the chief aim of the designer. A comparison of electrical heating equipment with any other form of fuel consuming device for heat production leaves nothing to the imamination. No fuel storage space is required nor any large number of pipes for the conveyance of oil or gas. Because the walls of the equipment are covered with heat insulating and retaining materials no objectionable heat radiation is encountered, thus working space close to the equipment can be utilized, resulting in an additional economy where floor space represents real money.

An example of this is given in the annealing of alloy steel. No annealing boxes are used in the electric treatment, therefore no storage space is required and a 50 per cent saving in floor space is the result. A further economy may be realized due to the fact that electric heating equipment may be placed at any point in the plant where it will best fit into the production cycle.

### Economy of Labor

Because of uniform quality resulting from electric annealing of steel no "hard spots" result. Therefore when the steel is worked in the lathe no slowing up of the work occurs because a uniform cutting rate can be maintained. In the manufacture of bath tubs the use of electric heat for firing vitreous enamel results in increased production per furnace. No firemen to feed fuel are required with electric heating equipment and no licensed attendant is necessary.

Another aspect of labor economy to be considered is that of labor turnover. It is a costly operation, in any industry, to train new working people. Electric heat makes for space economy, purer air, more comfortable temperature and a reduction in noise. All these factors have a decided bearing upon labor turnover, and are worthy of serious consideration.



Industrial heating requires heavy duty installation, as may be seen from this electric arc brass melting furnace used by the Market Street Railway in San Francisco.

# Better Merchandising

## Plan Now for a New Year of Successful Selling

### Good Resolutions Are in Order for Improved Methods of Handling Sales, Advertising, Stock and Service

The New Year heralds a new order. A Chinaman looks upon his New Year as a complete new deal all around. He settles all his debts and cleans up his affairs, ready for a new activity and its responsibilities.

As long as the present credit system works so well there is no need for the electrical merchandiser to turn Chinese in order completely to begin anew. But the new year may mean a new start just the same, with some of the old stock, some of the old credit, some of the old fixtures and fittings, it is true, but with a refreshed viewpoint at least. If the business has gone swimmingly during the past year there is small need to change it in basic principles, just so it can be kept swimming this year. If business has done well or just fairly well, then it would not be amiss to look it over carefully and critically to determine if it could not be improved here and there.

#### After the Inventory, What?

Custom bids that New Year's Day be spent by the boss in solitude in his cold, unlighted shop, un-noticed as he digs into dusty corners and forgotten stock shelves, taking inventory. The very idea is enough to chill the enthusiasm of the most sanguine merchandiser. Yet inventories are a necessity and even a blessing—in disguise of course. They reveal a lot of forgotten junk which may well be disposed of for ever. They show up lines of merchandise that have not sold, bright ideas that have never "got across" to the public. They give the proprietor a close-up of his stock on hand and set him his first job, that of moving it.

After the inventory the merchandiser may well take a round of golf or a fishing trip in the country in his flivver so that he can forget it all prior to a new start. Though this sounds like a doctor's prescription it isn't bad medicine for any business man after the inventory is over. His outlook on life will be more cheerful and he will plan the year ahead more enthusiastically after he returns.

#### Why Bother with a Plan?

No merchandiser arrives at any particular goal if he does not have some sort of an idea as to where he would like to arrive. He may fall far short of his ambitions but be it said, it is better to have had ambitions and lost than never to have had ambitions at all. The genuine merchandiser, whatever line he sells, charts some sort of a course for himself and his organization, even if he carries it in his head. After the inventory is a good time to form such a plan of campaign.

There are certain seasons more favorable to one type of appliance sale than others. There are national campaigns, local campaigns, too, with which to get into step. The national campaigns for the first three months of this year, for instance, will be on waffle irons, toasters, and percolators for February, March and April, respectively. These should be set in their proper place on the year's map.

*Monthly Specials*

*February....Waffle Irons*
*March .....Toasters*
*April .....Percolators*

For these specials alone there should be intelligent planning. There must be the estimating of the quantity which can be sold, the ordering of stock, the planning of the displays, sales effort, advertising, time paper where such specials are offered on credit terms, and the planning of how to utilize such specials as a means of bringing more people to the store so that other and more profitable lines of merchandise may be sold. Many of the wisest and most successful merchandisers count it a calamity if they cannot sell each person who calls for an advertised special something better in the same line or at least a dozen lamps, a convenience plug or two, or perhaps a table lamp.

There are some definite items on the schedule for every merchandising business. Each one should be thought out and some decision arrived at as to what should be done about them during the year. Each man's business is different and distinct and requires individual handling of these items. They are set forth here merely as a reminder that something should be done about each one, some improvement perhaps, some change or, where present means of handling them are satisfactory, more emphasis upon them, perhaps.

#### Food for the Brainstorm

By no means complete, yet at least sufficient for one sitting, this is the list. Beginning with a budget and ending with credits each item contains good thinking diet:

**Budget**—Making one for the year's business.

**Stock**—Estimating requirements for the year, its sources, terms and the shipping arrangements for the lines to be carried.

**Salesmen and Office and Shop Personnel**—Whether the house-to-house selling plan will be feasible and where to get the right type of salesmen.

**Monthly Specials**—A survey of what to push each season of the year.

**Advertising**, the most important of all, for advertising includes:

- **Window Displays** and sales help material.
- **Store Dress** to fit the season and the sale.
- **Demonstrations**, either in the store, in cooking schools, fairs or at the home of your prospects.
- **Newspaper** advertising or handbills.
- **Direct Mail**—Letters to your customers, envelope stuffers, blotters, calendars, etc.
- **Follow-up**, best of good-will builders. Check up on your customer's satisfaction from the appliances you have sold him and open the way to sell him something else.

**Servicing**—Just how much you will do and how it will be handled so that it may not rob you of all your profit. How much to do free and where to start charging for it. How it can be handled to your satisfaction and the satisfaction and pleasure of the customer.

**Trade-ins**—What to do about taking old appliances in on new ones, and how to dispose of second-hand appliances.

**Deferred Payment Paper**—How shall it be handled and by whom—yourself or a broker.

**Credits**—Your own and your customers.

#### Electrical West Wants to Help

"What's the good of listing these heartbreakers without telling us what to do about them?" is the question now due. To answer it Electrical West pledges these pages each issue. Not that Electrical West shall set itself up as an authority, a master mind able to solve these riddles of the age, for no magazine could hope to enjoy such complete knowledge.

In these columns, however, will appear each issue the experiences of other merchandisers, the best ideas gleaned from the field of Electrical West—the eleven Western states. This issue itself presents several views of merchandising problems and successful methods of handling them. Succeeding numbers will devote these pages even more earnestly to serving its readers with ideas they can use. May 1927 reward the electrical merchandiser for the thought and energy with which he will attack the market this year.

# Pining for the "Old Days" Won't Bring Them Back

If you find that the women of your neighborhood no longer do their own washing and there is no market for washers, push the smaller electrical appliances more vigorously. Even folks who live in hotels and apartments can make use of many of the smaller items, such as flatirons, toasters and dozens of similar smaller electrical wares.

## Adjustment to Changing Conditions in the Retail Electrical Business Will Solve More Problems Than Wishes, Says Woman Manager

"Not pining over past conditions in the retail electrical field, but a rational conception of the changes taking place in this line and a practical adjustment of the dealer to these conditions, is the only sensible course for the electrical retailers of the country, especially the smaller ones," is the candid opinion of the woman manager of the Premier Electrical Company of Denver, Colo.

"It is very true that along certain lines, especially in some of the larger electrical articles, things are not what they used to be, but pining over the good old days will not bring them back.

"This change has been brought about gradually by the fact that so many families have moved away from real homes of their own into apartment houses and hotels. After moving to these places, many of the women refuse to consider the possibility of any further family washing and ironing and send practically all of their clothes out to laundries.

"This naturally has curtailed the sale of electrical washing machines and ironers in some localities, articles which run into good money. However, if he finds this to be the case the alert dealer must overcome the loss of this type of business by creating a demand for something new electrically, or supply a demand for something already leaping into popular favor along electrical lines. It doesn't pay to lie down on the job just because the women have quit doing their own washing and ironing.

"One electrical line which apparently has not been affected by the exodus from homes into apartment houses and hotels, is the vacuum sweeper. No matter whether the floor of the room or the apartment is cleaned by the lady of the house, or by a maid hired to do the work, the vacuum cleaner seems to do the job more thoroughly than anything yet invented, and so vacuum cleaners are a very dependable electrical line.

"In this store we have utilized the popularity of the vacuum cleaner and its efficiency as an electrical ware to make up for the decline in popularity of certain items which some women refuse to operate, such as the electrical washing machine and associated articles.

"As long as there are floors to keep clean, especially carpeted floors, which can really be made sanitary only by the vacuum sweeper, there is going to be a steady demand for this remarkably efficient household 'weapon'.

"First, of course, we make a leader of vacuum sweepers and sell as many as possible of them. But perhaps even more important, we maintain a service department for the repair of cleaners. This is one of the most important as well as most profitable angles of our electrical business.

"Vacuum cleaners get a lost of rough treatment, not only from maids who use them, but from the lady of the house herself, and that is why, perhaps, there's a lot of good business for the electrical dealer in 'servicing' these sweepers. If everyone were as careful with her sweeper as a lady who brought hers here recently, why there would be little work along this line for us. This woman had owned her sweeper for ten years and had never spent a cent for service until she brought it to us.

"However, the fact that most owners and users give little thought to being careful with such mechanisms makes the servicing of them a very profitable line. During the past few years, by stressing this angle of our work and giving it some publicity, we have serviced thousands of vacuum cleaners.

"Another method we have used to combat the decline in the popularity of certain electrical lines is to push the smaller electrical stuff more vigorously. Even folks who live in hotels and apartments can make use of many of the smaller items, such as flatirons. toasters and dozens of similar smaller electrical wares. All that is necessary is to display this smaller stuff properly and talk it energetically once the prospect is lined up.

"All of these things are essential to the success of the smaller dealers, and essentially the question is one of adapting one's self to the imperceptible but nevertheless real evolution going on in the retail electrical business. The smaller dealer can still make a 'go' of it, in spite of the big felows, those who can bring to bear great amounts of capital, choice business locations, and attractive show windows and interiors.

"Yet, in many ways, the small dealer, at that, has certain advantages over the big fellow. The personal touch, for instance, and the intimate details of personal and unusual service will enable him to hold his own against any large dealer even in the choicest location."

# The Repair Job as a Harbinger of Good Will

## Cost Record of Appliance Repair and Trouble Calls Kept by Colorado Company Nets Efficiency, Satisfaction and Increased Sales

An electrical appliance which has ceased to function properly is commonly looked upon by the firm which sold it as a harbinger of grief. It would be a super-optimist, indeed, whose smile grew apace with the activity of the repair shop. And yet, if we place any stock in the doctrine that every cloud has its silver lining, we can countenance the theory that other elements than gloom can be perceived in a troublous situation by the eye which chooses to be discerning.

The Fort Collins office of the Public Service Company of Colorado has evolved a policy and a system for carrying it out whereby appliance failures are no longer considered merely as pure and unadulterated producers of woe. In fact, while it would be untruthful to say that appliance troubles are courted, they are, nevertheless, capitalized in most instances into a better and more confidential relationship between the customer and the company, which, in this case, is the power distributor of the section.

### The Customer Must Be Pleased

The system has several component features which, for the sake of clarity, will be presented one at a time. The first to be considered is the method of making sure that the customer is satisfied.

This is accomplished through a questionnaire follow-up on every appliance repair job handled. It consists of a double postcard, the return to be filled in by the customer and mailed back. The company card states:

> Your.....was recently repaired in our shop.
>
> All repair work done by us MUST give satisfaction.
>
> Please let us know by mailing the attached card what kind of service you are receiving from the appliance.
>
> At your SERVICE.

The reply card reads:

> The appliance repaired and adjusted in your shop is now giving.....service.

Then follow several blank lines of space upon which the customer may amplify his reply. At the bottom of the card are spaces for the name, address and phone number of the customer.

The card, in effect, invites criticism. It overcomes any feeling of reluctance which a certain proportion of people feel against complaining, even though they may have just grounds for complaint. It insures that complaints will be made to the company, where they should be made, and not be voiced indiscriminately by housewives among their friends, with resulting detriment to the company.

Replies from appliance owners naturally vary greatly. The prevailing ones are such words as "good," "fair," "satisfactory," or "unsatisfactory." Where the last mentioned applies, the owner usually explains in the space provided wherein the repair job failed to correct the trouble.

**Keeping the repair shop under sales department control results in a truer check upon the performance of merchandise sold, lessens sales resistance by giving better customer satisfaction and keeps the shop operating at a high standard of efficiency. Keeping records on the work shows whether or not profit is being made on the appliances handled. Together the system locates "trouble" where it really belongs and assists in eliminating the source and hence the effect.**

### Eighty Per Cent Reply

The card follow-up plan has been in effect a little more than a year. Over that period, replies have averaged a little better than 80 per cent of those addressed. As between 200 and 300 appliance repair jobs are handled each month, it can be readily seen that an expression is received annually from several thousand customers. Fort Collins has a population of approximately 14,000. As considerable outlying territory is served, the affected population will run probably to 20,000. If the latter figure is accepted, it is evident that from 10 to 15 per cent of the people in the area served are heard from every year.

All return cards are cleared over the desk of the local manager, keeping him in touch with the service rendered. Persons addressed do not always confine themselves to the direct subject. They may take advantage of the opportunity offered them to complain about light and power rates or service, wiring or meter installations. While this is not common, it is welcomed by the local manager when it occurs, as it opens the way for adjusting situations whose existence would otherwise probably not be known. Obviously, most of these complaints have to do with trivial matters, else they would have been reported before. Considered in the aggregate, however, they are important to a concern which depends largely upon good will for its continued existence and success in business.

When the appliance owner reports the repair job unsatisfactory, instant action is the result. It is important here to note that the repair department is under the appliance sales department and that it is a salesman, and not a repairman, who answers the complaint. The salesman calls on the customer immediately after the return card is brought to his attention, which is as soon as it is cleared over the local manager's desk.

The salesman gets a complete report, assures the customer that satisfaction is guaranteed, and takes the appliance back to the shop. After it is again repaired, a second card of inquiry is sent out, giving the customer further opportunity for expression.

In the opinion of the local officials of the company, including its attorney, the card follow-up system has been the most potent force exercised during the first year of its use to secure the good will of the community served.

### Advantages Under the Plan

Inclusion of the repair shop under the appliance sales department has many advantages. It keeps the sales force constantly informed upon the kind of service being secured from articles sold and enables them to better select merchandise for distribution. From the sales angle, it lessens sales resistance by minimizing promiscuous talk by a dissatisfied customer. It enables the sales force to be in a position to absolutely guarantee satisfactory service upon the article sold with perfect confidence that every promise made can be fulfilled.

From the standpoint of repairman efficiency, it furnishes a direct means of checking up upon the work of every individual in the shop and of keeping the personnel of the shop at a high standard.

### How Appliances Are Handled

The manner in which appliances are handled when they come in for repairs comprises the second big feature of the system.

As soon as the appliance reaches the office, a tag is attached to it. This tag is numbered, with a stub bearing the same number to be given the owner as a claim check. The tag has spaces for setting down all essential information regarding the appliance. The tag also shows when the article was received and by whom.

The appilance then goes to the repair department. Prompt service is the rule and appliance repairs have the right of way over everything except power interruptions.

As soon as the repairs are made, the repair man notes the charge for labor and material on the tag and it is returned to the sales floor for delivery to the customer. The floor clerk here makes a record of the tag number, nature of the appliance, the charge,

the name and address of the owner. This information is for use in sending out the follow-up card.

### Shop Record Kept

In the shop a labor and material sheet is kept each day. This shows the rate paid the repairman by the month and contains columns for the entry of complete data on each job handled. The tag number or trouble order number, the name and address of the owner and three items under the headings "labor" and "material" are included.

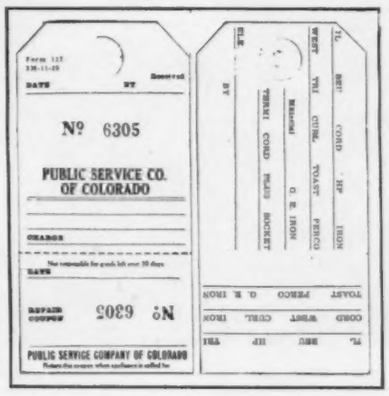
By means of serial numbers, it is noted when labor is gratuitous and material is free. If the job is one of installation, it is shown. The totals on labor and material on each job are shown.

These sheets are turned in each day to a floor man and are recapitulated at the end of each month. It is possible by checking against the shop cost sheets to determine exactly how much gratuitous labor and free material are consumed and whether or not a profit is being made by the appliance sales department on its shop activities.

It is important to note that all entries made for record purposes are on a money basis, making them easy to handle and compare.

### History of Repairs Important

The appliance repair record is a comprehensive history in figures of all repair jobs. It contains the following column headings: repair tag number, name of owner, address, date in, hour in, appliance, cord, make, serial number, when promised, date repaired, hour repaired, remarks, date returned, delivered by, cost and charge.




When the appliance is brought in the customer is given the stub of this repair tag, whereon is checked the appliance and trouble. In a minimum of time and effort this gives the information necessary for record making purposes.

This sheet serves not only as an adequate office record, but also insures customer satisfaction. If the customer calls for an appliance and it is not ready, the record shows whether the shop is at fault or the customer is ahead of time. If the appliance bears a cord when it comes in, the sheet shows this fact, and insures that the full article will be returned. If the wrong appliance is delivered the customer, a check-up is possible to learn the source of the mistake.

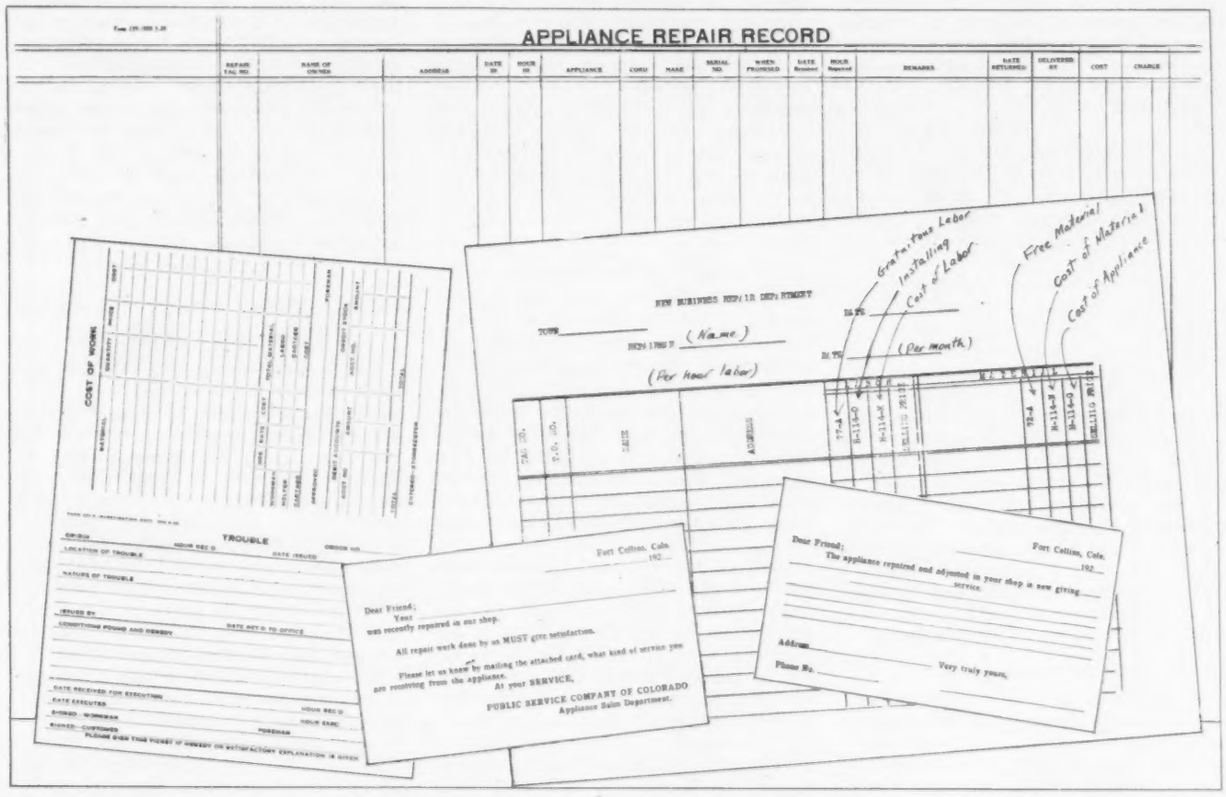
### Trouble Calls

Mention was made in the foregoing of jobs originating on trouble orders. The trouble order is a blank filled out in the office when a report is given there, by telephone or otherwise. This order shows the date and hour received, the location and nature of the trouble.

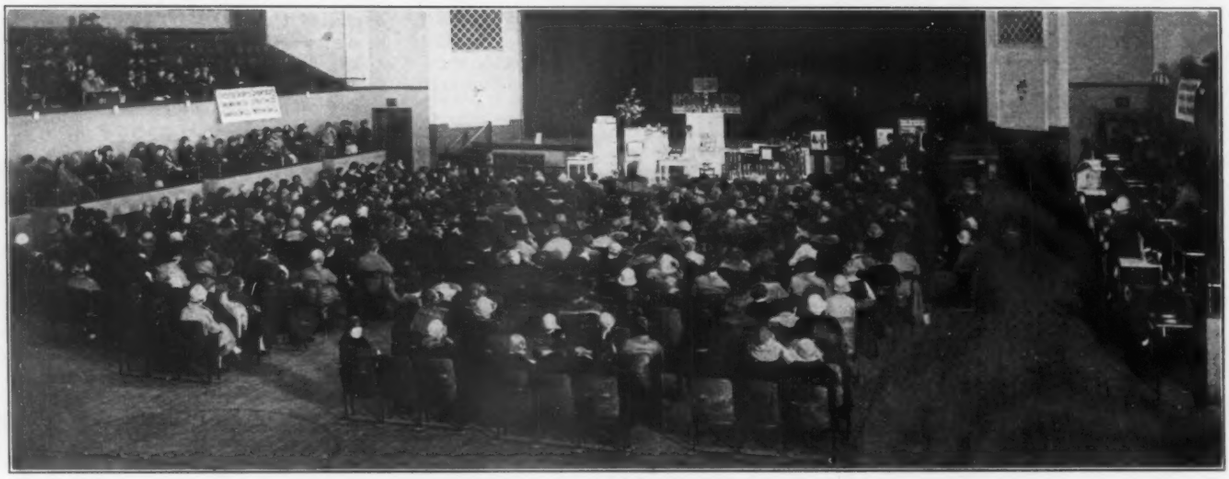
The order is turned over to the appliance repairman who goes out on the job. He enters on it the amount of labor and material to be charged the customer. His time is figured at $1.25 an hour from the time he leaves the shop until he returns. This gives the company a margin of profit of 75 cents an hour.

The trouble order is turned over to the office, and a customer's order is made out to cover the charge. The trouble order is attached to the customer's order as authority for making the charge to the customer.

This system has met with such success at Fort Collins that the company plans to install it in other localities of operation.




When the appliance is brought in for repair a record is made of it on the large appliance repair record sheet, listing all salient details regarding it. On the mimeographed form the repair shop lists the repair job, charging the work to the various accounts noted. On trouble calls to a residence the trouble sheet is made out in duplicate; on the under side of the first sheet a record of the cost of work done is given by the trouble and stockroom men. The postcards shown are sent to the customer for whom an appliance has been repaired to check up on whether or not the repair work was satisfactorily accomplished. These are sent out from three to five weeks after the repair is complete. Each return card comes over the local manager's desk so that he can note if satisfaction has been given and check up on his repair force. When reported unsatisfactory the repair job is done over.



Cooking school run by four electrical contractor-dealers in Colorado Springs, Colo., to which 2,200 women came to learn of electric ranges.

# Dealers Co-operate to Put on Cooking School

## Though Under Municipal Central Station Operation, Contractor-Dealers Take Initiative and Stage First Commercial Activity in Year

The first electric range demonstration and cooking school featured in Colorado Springs, Colo., was held last spring under the auspices of four contractor-dealers of that city in conjunction with the municipal light and power dapartment. The contractor-dealers participating were Whitney Electric Company, El Paso Electric Company, Domestic Electric & Radio Company and Colorado Electric Company. Representatives of each of these firms were present during the demonstration and served to explain the features of the various ranges on display and to act as ushers in attendance.

Attendance exceeded all expectations with a total number of 2,200 registrations, with an increasing attendance noted at each afternoon session.

This was the first semi-commercial activity undertaken in a co-operative way since the city of Colorado Springs took over the electric department in 1925 and the co-operation reported by the dealers is said to have been one of the major factors contributing to the success of the undertaking. The demonstration was held in the city auditorium which was provided by the city without charge; the necessary electric service, platform and other construction features required were included.

### City Plant Co-operates

The city distributed 10,000 broadsides with the names of the dealers participating and E. L. Mosley, manager of the department, addressed a letter to each of the 200 odd range users in Colorado Springs asking their interest and attendance. In the co-operative newspaper advertising spreads the city was represented each day with one of the largest spaces.

The Hotpoint range was featured exclusively in the school and demonstration. Miss Ardell Crockett, representing the Edison Electric Appliance Company, conducted the demonstration which was supervised and arranged by A. R. Woolley, company representative with headquarters in Denver. Through Woolley's efforts the co-operation of the largest Colorado Springs paper was obtained and a number of prizes were obtained from non-electrical merchants to be featured in connection with the demonstration.

### Parade Starts Campaign

A parade was held on Tuesday noon, April 13, the day the demonstration opened, and a number of floats were featured on the downtown streets.

Of unusual interest and value were the cards passed out to the women in attendance, through which questions could be asked, and answered by Miss Crockett. The names and addresses on these cards were also used in determining the attendance prizes given each day.

Each of the contractor-dealers supplied one electrical prize and the Mountain Electric Company of Denver, distributors for the Edison Electric Appliance Company, awarded a percolator set on the last day of the demonstration as the prize in a guessing contest, the object of which was to establish the complete power cost required to cook a representative meal prepared during the demonstration. This meal included ham loaf, buttered beets, baked potatoes, rice custard pudding, corn meal muffins, plus percolated coffee connected to the convenience outlet on the range. The meter cost of this operation for a period of 1 hour 15 minutes was 4⅔ cents.

Executives of the city power department and the contractor-dealers participating expressed themselves as deeply gratified over the results accruing from the demonstration. A number of ranges were sold as the result of the demonstrations made in the auditorium and plans were developed for a follow-up by each of the dealers of all the prospects obtained during the demonstration. Present plans contemplate the holding of a similar cooking school as an annual event.

## Replies Show Where Education in Appliances Is Needed

Some indication of the degree of acceptance of various electrical appliances may be gained from an interesting experiment conducted recently by the San Diego Consolidated Gas & Electric Company in connection with an exhibit placed by it in the annual county fair. Although this company does not merchandise appliances other than ranges and water heaters, it gave an opportunity to the large numbers of people from all parts of the territory it serves who visited the fair to express their interest in appliances.

As a means of attracting attention to the questionnaire, consisting of just one question, a handsome electric percolator was offered as a prize. It was exhibited in the company's booth, which was arranged to show a typical Red Seal electrical kitchen. (See Journal of Electricity, Dec. 15, 1926, p. 464.)

Every visitor to the booth was given a serially numbered card, which of-

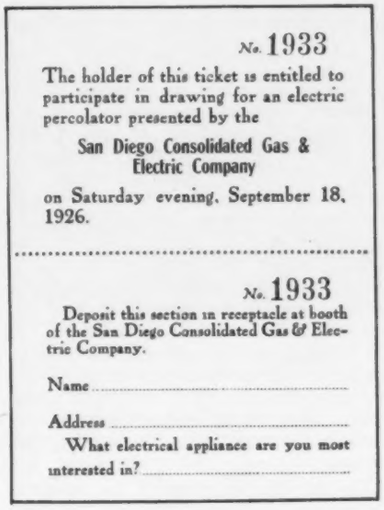
fered a free chance on the percolator. The stub of the cards, retained at the booth, and from which the drawing was to be made, provided a single line upon which the visitor was asked to write the answer to the question, "What electrical appliance are you most interested in?"

Besides the number of range and water heater prospects provided by these cards the results of the card were interesting from an appliance standpoint. The results indicate a strong public acceptance and desire for some appliances, in that locality at least, and a lack of interest in others which should call for greater sales and promotional efforts from dealers and manufacturers.

The figures would seem to show that the majority of the people were interested in percolators, but this is not to be wondered at since a percolator was the prize for the free drawing. Another interesting feature is the interest in ranges. That range interest leads waffle iron and toaster interest speaks well for the range, since the other two appliances have come into almost universal acceptance.

Refrigeration is shown to have passed the washing machine in interest, with the steady interest in electric flatirons holding its own. The other appliances show interest ratings which may well be taken as a measure of public acceptance, at least in that territory.

One of the things wrong with the picture is the rating given the electric heater. It and the electric dishwasher range in midposition between the most favored appliances and the electric piano and immersion heater.



No. 1933

The holder of this ticket is entitled to participate in drawing for an electric percolator presented by the

San Diego Consolidated Gas & Electric Company

on Saturday evening, September 18, 1926.

No. 1933

Deposit this section in receptacle at booth of the San Diego Consolidated Gas & Electric Company.

Name .....

Address .....

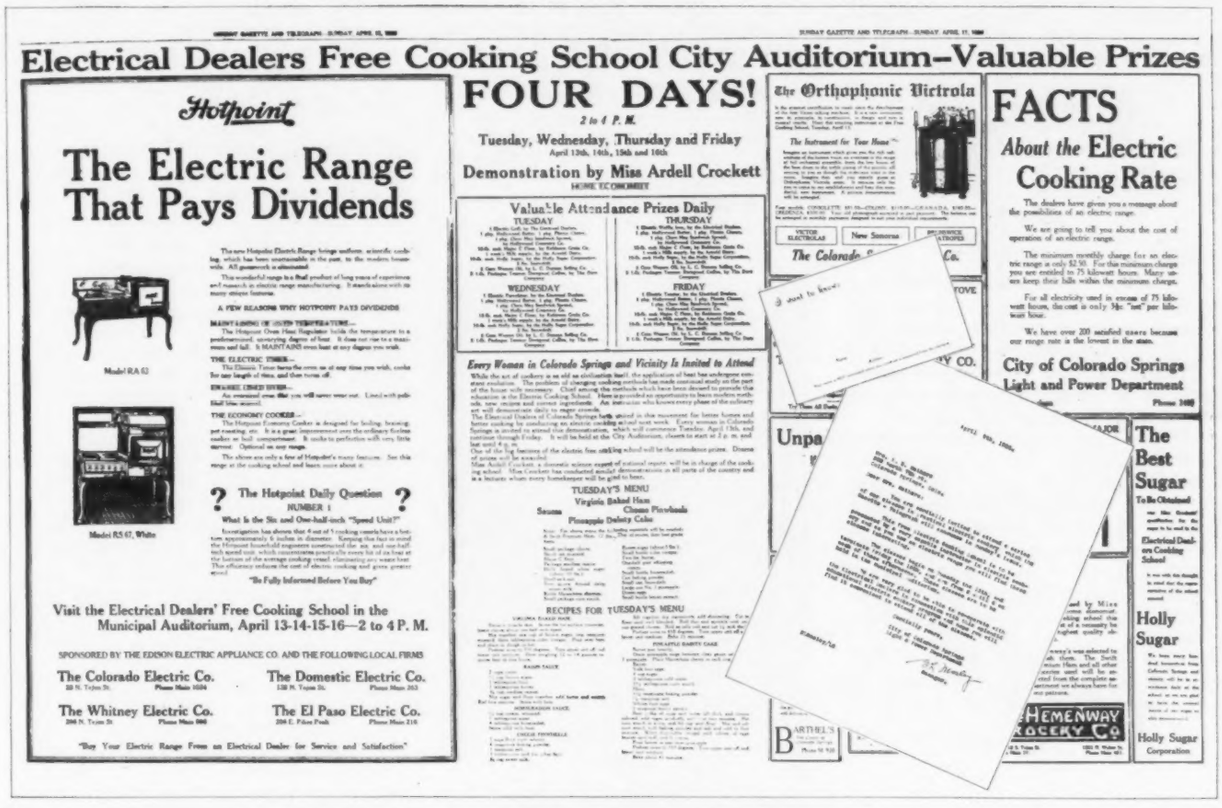
What electrical appliance are you most interested in? .....

Card passed out to visitors at the fair booth to determine their interest in electric appliances.

The following figures give some idea of the preference of electrical appliances as indicated on chance cards turned in by visitors at the exhibit:

| | |
|---|---|
| Percolator | 243 |
| Range | 167 |
| Waffle Iron | 125 |
| Toaster | 103 |
| Ice machine | 62 |
| Washing machine | 65 |
| Electric iron | 61 |
| Fireless cooker | 54 |
| Vacuum cleaner | 36 |
| Table stove | 34 |
| Ironing machine | 20 |
| All appliances | 18 |
| Water heater | 16 |
| Heater | 9 |
| Dish washer | 7 |
| Radio | 6 |
| Curling iron | 4 |
| Mixer | 4 |
| Electric light fixtures | 4 |
| Cigar lighter | 3 |
| Electric motor | 3 |
| Sewing machine | 3 |
| Electric piano | 1 |
| Immersion heater | 1 |
| Generating plant | 1 |

**Washer Campaign Sells 335 Machines.**—Claimed as the first washer campaign in America on the new Thor washers, the Pacific Power & Light Company reached a total sales mark of 335 machines, missing the 400 quota by but 65 sales recently. The contest conducted was won by the Pomeroy district with a total sales of 25 machines on a quota of 9, setting a mark of 278 per cent, the highest on the system at any time. The S. H. Heed trophy was awarded this district, as well as the McArthur trophy.



Electrical Dealers Free Cooking School City Auditorium—Valuable Prizes

Hotpoint

The Electric Range That Pays Dividends

Visit the Electrical Dealers' Free Cooking School in the Municipal Auditorium, April 13-14-15-16—2 to 4 P. M.

SPONSORED BY THE EDISON ELECTRIC APPLIANCE CO. AND THE FOLLOWING LOCAL FIRMS

The Colorado Electric Co. — The Domestic Electric Co.

The Whitney Electric Co. — The El Paso Electric Co.

"Buy Your Electric Range From an Electrical Dealer for Service and Satisfaction"

FOUR DAYS!

2 to 4 P. M.

Tuesday, Wednesday, Thursday and Friday

April 13th, 14th, 15th and 16th

Demonstration by Miss Ardell Crockett

HOME ECONOMIST

Valuable Attendance Prizes Daily

TUESDAY — THURSDAY — WEDNESDAY — FRIDAY

Every Woman in Colorado Springs and Vicinity Is Invited to Attend

TUESDAY'S MENU

Virginia Baked Ham

Sauces — Cheese Pinwheels

Pineapple Dainty Cake

RECIPES FOR TUESDAY'S MENU

The Orthophonic Victrola

FACTS About the Electric Cooking Rate

City of Colorado Springs Light and Power Department

The Best Sugar

Holly Sugar

Two full page newspaper advertisements such as were run daily during the conduct of the school. Other merchants co-operated in this advertising set-up. A copy of the letter sent out by the manager of the light department of the city to the range users of the city, and a card distributed to those in attendance to solicit questions on electric cooking, are shown in inset.

# News of the Industry

## Swing-Johnson Bill Is Approved by House Committee

The Swing-Johnson Bill providing a plan for the construction of the Boulder Dam project on the Colorado River has been reported favorably by the House irrigation and reclamation committee by a large majority.

The bill authorizes the secretary of the interior to build a high dam, about 550 ft. at Boulder Canyon on the Colorado River, where the stream is the boundary line between Arizona and Nevada, thereby creating a reservoir of 25,000,000-acre-ft. capacity. Authorization also is given to the secretary to build an all-American canal to get the Imperial Valley's canal system out of Mexico and to give the American government more complete control over the regulated flow of the river. The total cost of the project, including interest during the seven years of its construction, is estimated at $125,000,000 to be advanced by the government but to be repaid, with interest at 4 per cent, by the communities benefited.

At the time of the approval of the Swing-Johnson Bill by the committee a conference was in progress between representatives of the states of California, Nevada and Arizona for the purpose of endeavoring to arrive at an amicable adjustment of the demands of those states in the proposed development of the Colorado River. The House committee adopted a resolution that if an agreement should be reached it would be given consideration, but the tri-state conference adjourned without arriving at any agreement.

Following closely upon the action of the House committee, Gov. G. W. P. Hunt of Arizona called a special session of the Legislature to meet Jan. 3 "to enact legislation and make appropriations to properly conserve the interests of the state of Arizona in the Colorado and to provide for its development," according to press dispatches. The call further points out that Arizona and California are the only states which have failed to ratify the Colorado River Compact and that little progress has been made by the tristate river conference in Los Angeles; that the Legislature of Arizona will not accept the terms laid down by California for stream development, in the opinion of the administration, and that the "general situation as it affects Arizona has been endangered and aggravated" by the approval given the Swing-Johnson Bill by the House committee.

The regular meeting of the Arizona Legislature is scheduled for Jan. 10, 1927.

## Japanese Power Company to Buy American-Made Machinery

The recent arrival in San Francisco of three prominent officials of the Kanto Hydro-Electric Company, Tokyo, Japan, will be of particular interest to manufacturers of machinery for, according to the plans announced, they expect to purchase about $3,000,000 worth of power-plant equipment while in this country.

The Kanto Hydro-Electric Company, which is one of the largest of its kind in Japan, supplies Tokyo and vicinity with electrical energy. The three officials who are planning to purchase American-made machinery are H. Asano, managing director, K. Tsuruta, chief engineer, and K. Nukushima, chief electrical engineer.

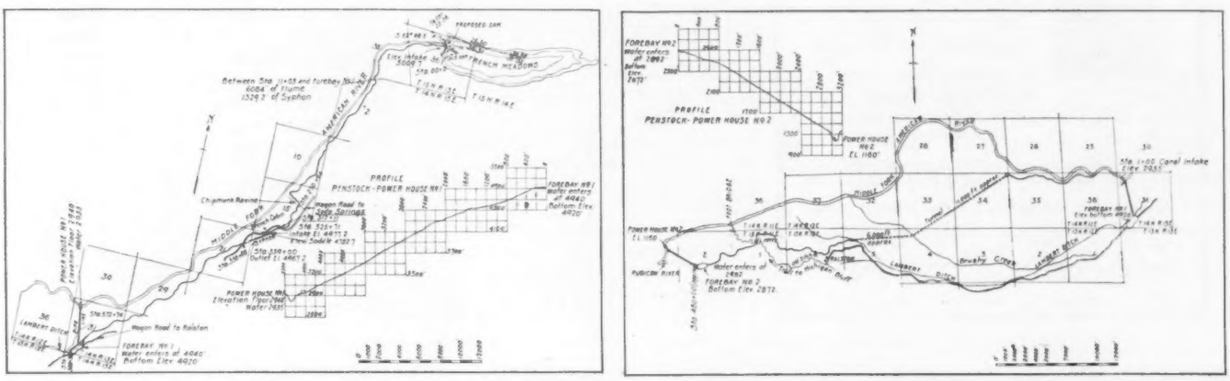
## Two 25,000-hp. Plants to Be Built on Middle Fork of American River

Plans for the construction of two hydroelectric plants aggregating 50,000 hp. on the Middle Fork of the American River in Placer County, Calif., have been announced by the American River Water & Power Company, 520 Call Building, San Francisco. The initial project, in addition to the two plants, will include dams, tunnels and ditches, with a total cost of approximately $8,250,000.

As projected at the present time, a 200-ft. constant-angle arch dam at French Meadows on the Middle Fork of the American River will impound 100,000 acre-ft. of water. In addition a 7-mile tunnel will divert the waters of the North Fork of the American River into the 50-sq.-mile watershed behind the dam. An 11-mile ditch with a capacity of 160 sec.-ft. will carry the water to a forebay above power house No. 1. This plant will have a capacity of 25,000 hp. under a static head of 2,000 ft.

Below plant No. 1 the water will be diverted into a second ditch 9½ miles long and after passing through 3 miles of 5 x 7-ft. tunnel will be dropped 1,750 ft. to power house No. 2, which also will have a capacity of 25,000 hp. Each power house will be equipped with two 12,500-hp. impulse wheels.

Surveys will be completed in the spring, and actual construction is expected to be under way before the fall of 1927. The officers of the American River Water & Power Company are C. W. King, president; H. J. Skinner, chief engineer, and Fred Dewhirst, secretary.



Plans of power plants 1 and 2, respectively, of the proposed project of the American River Water & Power Company.

# Edison Company Loses Water Rights Suit Through Supreme Court Decision

Upholding the decision of the superior court of Fresno County in the case of the heirs of the Herminghaus estate against the Southern California Edison Company, the California supreme court has ruled that the power company may not impound the waters of the San Joaquin River and its tributaries to such an extent as to prevent the annual overflow of the river and the consequent inundation of the Herminghaus acreage.

The doctrine of riparian rights was the principal factor involved in the litigation. In their original action the Herminghaus heirs, which own 18,000 acres of land along the San Joaquin River, set forth that the silt deposited by the river's annual overflow made their land unusually productive and that the diversion of the flood waters by the power company would seriously affect the value of the land. The Edison company contended that the method used by the plaintiffs was wasteful and that under the Water Commission Act the company had the right to impound water which otherwise, for the most part, would flow unused into the ocean. The superior court ruled in favor of the plaintiffs and issued an injunction restraining the power company from the use of the waters to the extent stated.

In effect this meant that water stored in Florence Lake, Vermilion Valley and Blaney Meadows reservoirs on the so-called east side development of the Big Creek hydroelectric project could not be carried through Florence Lake tunnel and held in storage in Huntington Lake or Shaver Lake for use through the chain of Big Creek power houses but must be allowed to flow on into the San Joaquin River so that its normal flow would be unaffected. The decision would prevent in like manner the storage of water along the Middle Fork of the San Joaquin River on the west side development, to be carried out in the future. On the east side development at present there are four power houses with an aggregate capacity of 238,000 kw.

The Edison company carried the case to the supreme court, which has just confirmed the judgment of the lower court.

Immediately after the rendering of the decision by the supreme court, Edward F. Treadwell, attorney for the Southern California Edison Company, issued the following statement:

> The decision is a sweeping one and broadly decides that the plaintiffs are entitled to the full flow of the stream in order to cause it to overflow their land for grasses and through their high-water sloughs, and that this right is superior to any right of the Edison company as a riparian owner or appropriator to reservoir the water for power purposes. The decision also holds that the Water Commission Act, in limiting the landowner to the quantity of water reasonably necessary for the irrigation of his land, when the water is properly applied, is unconstitutional and beyond the power of the Legislature.
>
> While this decision, if it is adhered to, would be a severe blow to power development in this state and give a hold-up value to swamp and overflowed lands, it will in no way interfere with the project of the Edison company. The necessities of the people of the state for electric power and light are too great to be stopped by such a wasteful use of water and, if the company cannot otherwise establish its right, it will be compelled to and will condemn these overflow rights.

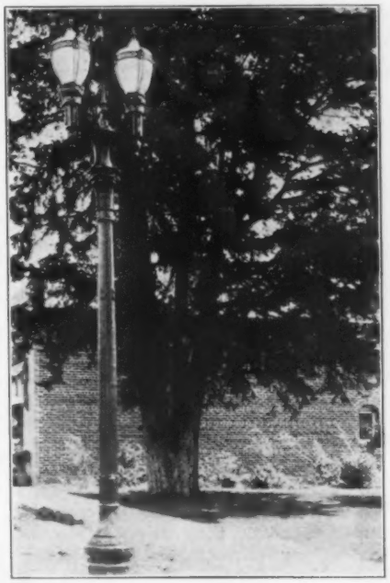
The decision will operate in no way to stop the hydroelectric power development planned by the Edison company, according to a statement attributed to R. H. Ballard, executive vice-president and general manager, but simply will require that the company in providing for storage in the future will acquire the rights adversely affected by such storage.

## Lighting System Installed by Two Cities on Boulevard

The cities of Glendale and Burbank in California recently have had a new lighting system installed on San Fernando Boulevard where that thoroughfare passes through their respective business centers. Westinghouse standards and lighting units were used.

In Burbank 181 standards were used, each standard carrying two lighting units containing one single 400-cp. lamp. Bi-Lux refractors were used. The metal standards were cast all in one piece. In Glendale 100 two-light standards were installed. These units were without the Bi-Lux refractors. The design of this standard, shown in the accompanying illustration, was made up for Glendale, exclusively.

In these installations lead and rubber-covered cables were used exclusively in the underground system and, as an additional item of safety, Westinghouse disconnecting potheads were installed in the base of each lighting standard.



## Electric Refrigeration Trade Association Is Formed

To promote ethical sales practices, and in answer to the desire of everyone in the business to educate the public to the value of mechanical refrigeration in the home, there has been formed in Portland the Electric Refrigeration Trade Association. Fifteen local dealers and distributors, representing every make of machine sold in the local market, belong. Early in the history of the association it was decided to have only two officers, these to be chosen from the two power companies, and three additional members on the board of directors, chosen from among the dealers and distributor members. The present officers are: president—C. C. Crawford, refrigeration engineer, Portland Electric Power Company; and secretary and treasurer—J. B. Buman, appliance sales manager, Northwestern Electric Company. The additional members of the board are: Kenneth Martin, Covey-Copeland Company; J. W. Condon, Jr., L. C. Warner Company; and F. B. Obee, Power Plant Engineering Company.

A program of advertising and education, using the radio as the medium, has been commenced. Every Sunday evening the association provides a one-hour entertainment from one of the local broadcasting stations, and at the end of the period the names of the member firms are mentioned as well as the make of machine handled. In addition, a fifteen-minute educational talk on refrigeration is broadcast every Wednesday afternoon in behalf of the association. These talks have been prepared as a series of lectures, taking up the history of refrigeration from ancient times to the present and continuing with such subjects as description of the modern mechanical refrigeration process, proper preservation of food, and future of electric refrigeration.

## Stone & Webster and Blodget New Investment Concern

Stone & Webster, Inc., and Blodget & Company, announce the formation of a new company under the name of Stone & Webster and Blodget, Inc. The company will begin operations Jan. 1, 1927, with an authorized capital of $10,000,000. The corporation is a combination of the securities department of Stone & Webster, Inc., and the old investment house of Blodget & Company. The engineering and construction, management, and investigating departments of Stone & Webster, Inc., are not included and will not be affected by the combination.

Bayard F. Pope, now a partner of Blodget & Company, will be president of the new corporation, and its head offices will be at 120 Broadway, New York.

Stone & Webster and Blodget, Inc., will offer a complete service both to investors and to issuers of securities, namely, municipalities, railroads, public utilities and industrial companies.
and similar topics.

## Lighting Committee's Fact Book Ready for Distribution

The Industrial Lighting Fact Book, prepared by the industrial lighting committee of the Commercial Section, N.E.L.A., is now ready for distribution.

The Fact Book is the result of the decision of the committee to utilize that portion of the money contributed by the manufacturers for last year's campaign remaining in the treasury to give the entire electrical industry the benefit of the experience of the most successful campaigns last year, and to back up this year's activity with advertising to the prospects for improved industrial lighting installations. In the Fact Book are set forth the summaries of methods used by companies in (a) Organizing Local Interests, (b) Selecting a Prospect List, (c) Working a Prospect List, and (d) Building Temporary and Permanent Exhibits. In addition, the results of the activities in fifteen localities are tabulated and analyzed. Specific plans such as those followed in New York, Philadelphia, Boston, Baltimore, Cincinnati, Louisville and Buffalo are outlined, and many illustrations of "before and after" lighting installations and diagrammatic sketches are given. Details also are included relative to the prizes offered for 1926-1927, these prizes being for $500, $300 and $200, respectively.

Copies of the Fact Book may be obtained at the following prices: 1 to 10 copies, 50 cents each; 11 to 99 copies, 35 cents each; 100 or more copies, 25 cents each. All orders for less than 100 copies should be accompanied by check or money order. Orders should be addressed to the Industrial Lighting Committee, Commercial Section, N.E.L.A., 29 West 39th Street, New York.

## Fishway Problem Is Not Solved Fisheries Officials Say

Charges that a false impression regarding the success of the Baker River fishway has been brought about through "a constant and nation-wide propaganda . . . maintained in newspapers, engineering and technical magazines" are included in a resolution passed by the International Pacific Salmon Investigation Federation at a meeting in Seattle Dec. 2, 1926. This organization is declared to be composed of fisheries officials of the United States and Canadian governments, the states of California, Oregon and Washington and the territory of Alaska. The resolution states that no solution of the salmon fishway problem that is of general application has been reached; that the Baker River experiments are not yet conclusive, and that each dam presents an individual problem.

The resolution follows:

WHEREAS, A constant and nation-wide propaganda has been maintained in newspapers, engineering and technical magazines, conveying the impression, based on the partial success of the experimental fishway at the Baker River dam near Concrete, Wash., that a complete solution has been reached of the problem of safeguarding salmon runs jeopardized by the construction of dams; and,

WHEREAS, In the opinion of this Federation no solution of the problem has yet been reached that can properly be considered as a general application; and,

WHEREAS, In the opinion of this Federation the problem connected with each dam is individual and distinct; and,

WHEREAS, Much of the work at Baker River dam has so far been experimental and results there are not yet conclusive Therefore, be it

*Resolved*, That the International Pacific Salmon Investigation Federation, at its meeting on Dec. 2, 1926, strongly disapproves the propaganda above mentioned as being unwarranted and misleading; and further be it

*Resolved*, That a copy of this resolution be presented to newspapers and periodicals, and to such officials and others as may be interested.

In contrast with the action of this organization, those in charge of the work at the Baker River fishway (see Journal of Electricity, Sept. 15, 1926, p. 195) report that during the last salmon run 12,000 mature salmon were carried over the dam successfully and that literally hundreds of thousands of small salmon had negotiated the leap from the top of the dam to the pool below with apparent success.

In addition to passing the resolution, the meeting listened to reports showing that scientific investigation of the salmon problems throughout the Pacific Coast had made exceptional progress. Plans for future co-ordination of work were outlined and a committee appointed to organize a co-operative study of problems relating to the passage of salmon over dams other than the one at Baker River.

## N.E.L.A. Convention in Atlantic City Set for June 4-10

The fiftieth annual convention of the National Electric Light Association will be held in Atlantic City, N. J., June 4-10, 1927. It will be the eighth meeting that the N.E.L.A. has held in that city.

A new feature of the exhibition will be the opening on Saturday, June 4, at 1 o'clock, two days in advance of the official opening of the convention. Among the reasons given for this are that many delegates arrive on Saturday and Sunday; that a large number of non-convention visitors usually spend the week-end in Atlantic City and that the association and the industry as a whole will profit by having those visitors see the convention exhibits; that the installation cost to exhibitors completing their exhibits by Saturday noon is far less than when the exhibit is opened on Monday, due to excessive overtime for labor and service of all kinds necessitated by Saturday afternoon and Sunday work; and that the additional time added to the period of exhibition should prove of real value to each exhibitor.

Application blanks for space and floor plans for the exhibition have been mailed, and the exhibition committee requests that applications be filed at committee headquarters, 29 West 39th Street, New York, by Dec. 20.

## Irrigation District Applies for Permit for Power Project

Application has been made by the Turlock Irrigation District, of Turlock, Calif., to the Federal Power Commission for a preliminary permit covering a project on the Tuolumne River and tributaries near Groveland, Calif.

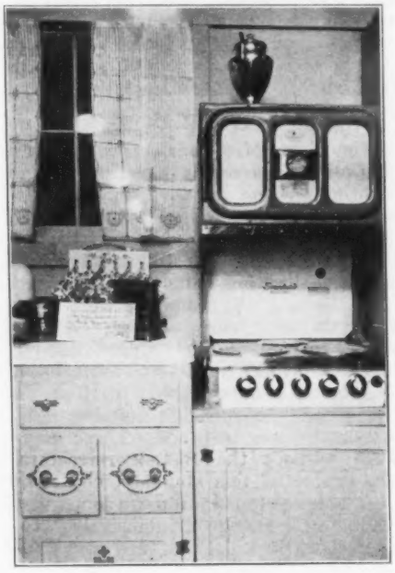
It is proposed to divert water from the Middle and South Forks of the Tuolumne to the Groveland reservoir on Big Creek. A rock-filled dam 240 ft. high is proposed. The power house is to have a head of 1,587 ft. With 250 sec.-ft. 40,000 hp. will be developed. The water from the Groveland power house will empty into a regulating reservoir of 20,000 acre-ft. capacity on the Tuolumne River. The water then is to be diverted to a forebay where with water from Moccasin Creek it will supply the Jacksonville power house where an additional 12,000 hp. will be developed.

The tailbay of this plant is the existing Don Pedro reservoir of the irrigation district. Surplus power is to be sold to public utilities.

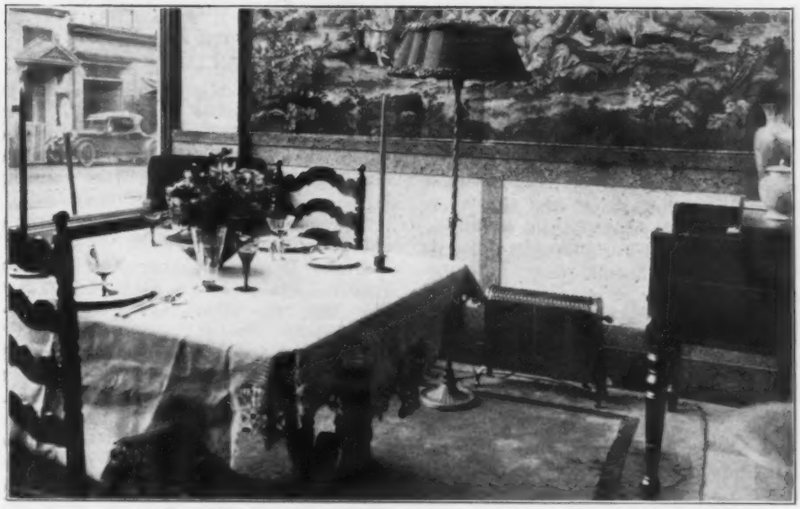
## Mark Hopkins Hotel Apartments Have Electric Ranges

In the recently opened Mark Hopkins Hotel in San Francisco the kitchens in the hotel apartments, of which there are about thirty, are equipped with electric ranges. In addition, a number of convenience outlets have been supplied for the use of smaller appliances in both the kitchen and the other rooms.

Capitalizing on the interest created by the opening of the big hotel, which is situated at the corner of California and Mason Streets on Nob Hill, as that district is familiarly known, the Great



Replica of the type of kitchen in the hotel apartments of the Mark Hopkins Hotel on display recently in the window of the Great Western Power Company, San Francisco. Each apartment is equipped with an electric range.



Window display of Great Western Power Company, San Francisco, reproducing combination living and dining room in hotel apartments in Mark Hopkins Hotel, San Francisco.

Western Power Company reproduced in its windows one of the apartments, showing not only the electrical equipment furnished by the hotel but displaying also a number of other electrical appliances, such as a heater, toaster, percolator, waffle iron, and similar devices which the tenant of such an apartment would find convenient and desirable.

## First 125,000-hp. Unit of Steam Plant to Be Begun by Edison Company

Work on the installation of the first 125,000-hp. unit of the new Long Beach steam plant No. 3 of the Southern California Edison Company is to begin at once, according to an announcement just made by George Clinton Ward, vice-president in charge of operation and construction for the company. Present plans call for a total installation of eight such units which will bring the total capacity of the entire Long Beach steam plant to more than 1,250,000 hp., a capacity larger than that of any existing steam generating plant.

This first unit is to be ready for operation Feb. 1, 1928, and is to cost, together with necessary transmission and distribution equipment, approximately $7,000,000.

The new structure is to be placed immediately adjacent to the present steam plant, the first unit of which was built in 1912. It is to be of reinforced concrete construction, 250 ft. long by 230 ft. wide by 90 ft. high. As new units are added the structure is to be lengthened to a full 1,000 ft.

To furnish a suitable foundation more than 7,500 piles averaging 40 ft. in length are to be driven. Inside of the turbine hall the turbine itself will rest upon a reinforced concrete structure 32 ft. high. The turbine is to be built by the General Electric Company. It will operate under a steam pressure of 450 lb. and a steam temperature of 750 deg. F. These turbines will be a tandem compound type with double flow in the low-pressure unit and will have eighteen stages in the high-pressure cylinder and three stages in the low-pressure cylinder. They will be the largest single-shaft steam turbines ever built. It is said that more power will be put upon this single shaft than was ever put on any single machine.

Because of the immense size the condenser is to be made up in four sections, which are to be constructed vertically to make possible efficient grouping about the turbine. This it is said is the first time that condensers of such size ever have been constructed vertically.

Salt water for cooling purposes is to be brought in from Long Beach Channel and then discharged directly into a discharge tunnel 25 ft. in diameter and 1,000 ft. long, thence into an open creosoted flume also 1,000 ft. long, directly into the ocean.

Four special air blowers are to be used to circulate the air for cooling the generator. This is a departure from the normal method of having the air kept in circulation by means of fans fastened directly to the shaft. This new system has been so constructed as to make possible the use of hydrogen as a cooling agent when that method has been perfected. The condensers are to be built by Ingersoll Rand Company.

A complete set of recording instruments for measuring performance are to be included as a part of the regular installation. These instruments will register accurately every feature of the plant's peformance at all times so that if may be said that the plant is always operating "under test," instead of the usual "staged" periodic tests. This elaborate set of recording instruments is to be built in because, with the large amount of fuel which this plant of necessity must use, it was felt that there was a possibility of minor troubles causing great losses of efficiency under the "stage" test system.

Three complete Babcock & Wilcox boilers and furnaces are to be installed for the first unit. Each of these boilers will have a heating surface of 35,000 sq.ft. Boiler and furnace together will stand 64 ft. high, 34 ft. wide and 24 ft. deep. The furnaces will be arranged so as to burn oil, gas, or pulverized coal. All furnace walls are to be water cooled. The air used for combustion is to be pre-heated to 450 deg. F.

Electrically is to be generated at 16.5 kv., and then stepped up to 220 kv. and sent out over two new 220-kv. steel-tower lines to connect with the present 220-kv. system. The take-off towers will extend 260 ft. above the ground while the new crossing towers over Long Beach Channel will be 310 ft. high.

## New Ownership of Yuma Utilities Company Is Announced

Announcement has been made of the purchase of the stock of the Yuma Utilities Company, Yuma, Ariz., by The Nevada California Electric Corporation, a holding company which owns the stock of The Southern Sierras Power Company, The Nevada California Power Company and other properties. The Yuma company for years has been buying power from The Southern Sierras Power Company at the latter's Colorado River substation in California, and this arrangement will be continued. The power is distributed in the farming country extending for a distance of 60 miles around Yuma.

The Yuma Utilities Company will continue to be operated under that name, with the following officers: president—E. F. Sanguinetti, Yuma; vice-presidents—A. B. West and E. B. Criddle, Riverside, Calif.; secretary—P. R. Ferguson, Riverside; treasurer—A. S. Cooper, Riverside. These officials, with F. O. Dolson, assistant general manager, The Southern Sierras Power Company, Riverside, constitute the board of directors.

## "Co-Val Booster" House Organ of Coast Valleys Company

"Co-Val Booster" is a recent addition to the ranks of central-station house organs. The magazine, which appears the tenth of each month, is published by the Coast Valleys Gas & Electric Company, Salinas, Calif., for its employees. It is edited by Phillip S. George and Herbert W. Swenson, assistant editor. Porter S. Young, electric line foreman in the King City district, and W. H. Schneider, substation operator at Salinas, were awarded prizes for the suggestions from which the name, "Co-Val Booster" was coined.

The material published is handled with dignity and restraint, and typographically the paper makes an attractive appearance.

## Handbook Subject of Contest for Power Company Metermen

In order to encourage metermen to make a thorough study of the Metermen's Handbook, published by the National Electric Light Association, R. M. Freeman, meter supervisor, Pacific Power & Light Company, Walla Walla, Wash., instituted a contest based on a study of the book. The 167 "questions for metermen" at the end of the handbook were divided into groups, each covering a certain portion of the subject matter of the book, and a time was set in which contestants should complete each group so that the entire book would be covered and all the questions would be answered in the time allotted for the study.

Two classes of employees were eligible to compete, each in his own class—first, the regular metermen, and second, other employees chosen by the district managers as being employees who could best profit from a familiarity with the handbook. For the best set of answers submitted in the metermen's contest a trip to the Northwest Electric Light and Power Association convention was awarded as the prize. In the other class, the first prize was $15 and the second, $10.

The winner in the metermen's class was G. L. Taft, Toppenish, Wash., while S. R. Wilson, Hood River, Ore., J. P. Nesvig, Yakima, Wash., and R. E. Floyd, Lewiston, Idaho, received honorable mention. In the contest for other employees, John D. Hertz, Hood River, was first, Emmett Schoonmaker, Lewiston, was second, and Chester Hoyt, Pendleton, Ore., received honorable mention.

## Extensive Improvements Made by Central Arizona Company

Completing the extensive plan for improvements inaugurated in 1925, the Central Arizona Light & Power Company, Phoenix, has expended for betterments and improvements this year more than $700,000, making the total expenditures for the two years more than $1,500,000.

During 1926 the company added to its electric plant a 9,000-kw., 3-phase, 40/2.3-kv., 25-cycle transformer and an 8,750-kva., 25 to 60-cycle frequnecy changer to handle additional power received from the Salt River Valley Water Users' Association. This installation necessitated extensive alterations to the plant. In addition, the company's city distribution system and station bus at the plant were changed from 3-phase, 3-wire, to 3-phase, 4-wire. More than 1,000 consumers were added to the lines, a large number of them in suburban territory.

New office building of the Central Arizona Light & Power Company, corner Third Avenue and Washington Street, Phoenix.

In 1925 the company rebuilt 75 miles of long-distance transmission system, raising the voltage of the line from 40 to 66-kv. It also added a 9,000-kw., 3-phase, 66/2.3-kv., 60-cycle transformer to its Phoenix plant, a 10,000-kw. transformer of similar characteristics at the Child's power house, and 4,000-kw. and 600-kw. autotransformers at Sycamore and the Kay Mine stations, respectively. The Phoenix distribution system was changed, together with 3,500 motors, from 2-phase to 3-phase. The company also advanced to the Salt River Valley Water Users' Association $410,000 for the erection of a 7,500-kw. hydroelectric plant at its recently completed Mormon Flat Dam. This plant will furnish power to both the association's power system and to the Central Arizona company. In addition, a 60-ft. Hortonsphere was added to the gas department, together with 12 carloads of pipe for new high-pressure gas mains in the new suburban districts.

The company's prospective construction budget for 1927 is set at $500,000.

The Central Arizona Light & Power Company recently moved its headquarters to the new Walker Building at the corner of Third Avenue and Washington Street, Phoenix, occupying it in its entirety. The basement is used as a merchandise warehouse, the first floor as a sales floor, together with cashier's and collection department, while the second floor is given over to the administrative, engineering and billing departments.

**Contract Awarded for Equipment** for **Alaska Lumber Mill.**—Contract has been awarded the Fairbanks-Morse Company, Seattle, for furnishing Twenty-five motors and control equipment for an electrified lumber mill at Juneau, Alaska, for the Juneau Lumber Mills Company. The motors, ranging from 150 hp. down, will be utilized in a plant being rebuilt and electrified.

## Denver Company's Franchise in Final Form for Voters

The proposed gas and electric franchise of the Public Service Company of Colorado, Denver, is now ready for submission to the people early in February as officials of the company, the city administration and the council have approved the draft.

The major points in the final franchise draft are:

Grant to run 20 years, embodying rate reductions of approximately 12½ per cent for domestic electric consumers.

Rates subject to downward revision by agreement of company and city but not to increase except by vote of the people.

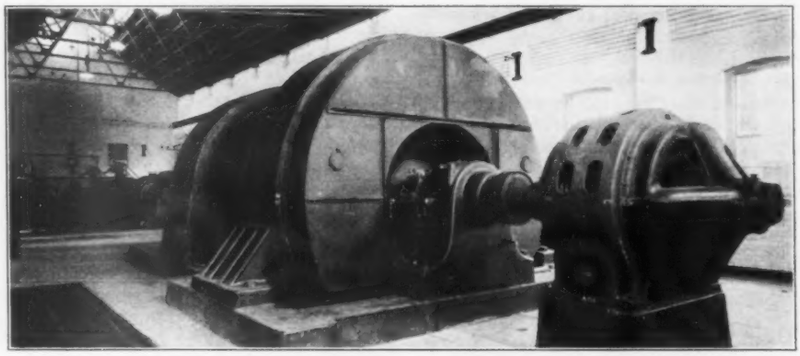
Company agrees to minimum gas standard of 400 B.t.u.

Company agrees to purchase hydroelectric power generated by proposed South Platte project, if adopted, but not at rates in excess of cheapest generation costs at present plants.

Company agrees to develop any natural gas supply declared feasible by city council.

Company to pay $60,000 annual franchise tax.

Basic domestic rates: flat—90-cent charge for 1,000 cu.ft. of gas and a monthly charge of 7 cents each for the first 15 kw-hr. of electricity used; 6 cents for the next 30 hours and 5 cents for additional energy. The minimum monthly charge on both is 90 cents.



To handle additional power from the plant of the Salt River Valley Water Users' Association at Mormon Flat Dam the Central Arizona Light & Power Company, Phoenix, recently installed this 8,750-kva., 25 to 60-cycle frequency changer in its own plant.

**Portland Man Files Four Applications for Water for Power Development.**—Among recent applications to appropriate water from Oregon streams filed at the office of Rhea Luper, state engineer, Salem, were four by C. C. Hockley, Portland, for power development. Two of these cover appropriation of water from the Siletz River, Lincoln County, for the development of 25,000 and 18,000 theoretical horsepower, respectively; a third covers appropriation of water from the same river farther up for the construction of a reservoir in Polk County; and a fourth asks for water from the Metolius River, Jefferson County, for the development of 47,500 theoretical horsepower.

# Splendid Tribute Paid to James H. McGraw at Dinner Given in His Honor

A notable tribute to James H. McGraw as a publisher, a leader of industry and a man was paid to him on Friday evening, Dec. 16, when a thousand representatives of engineering, industrial, educational, publishing and other callings filled the banquet room of the Hotel Astor, New York, to take part in a dinner in his honor. The immediate occasion was Mr. McGraw's sixty-sixth birthday anniversary, which coincided with the completion of more than forty-one years in the field of industrial and technical publishing. In this period the McGraw-Hill Publishing Company, Inc., of which he is president, has grown from small beginnings to its present magnitude.

John W. Lieb, vice-president, New York Edison Company, was toastmaster, and at the speakers' table, besides the guest of honor, were Arthur Williams, chairman of the dinner committee; Charles L. Edgar, Thomas E. Murray, Walter R. Addicks, Gerard Swope, M. S. Sloan, W. W. Freeman, E. M. Herr, Frank W. Smith, Willits H. Sawyer, Edward J. Mehren, Dexter S. Kimball, Guy E. Tripp, Philip G. Gossler, Martin J. Insull, William L. Ransom, H. M. Edwards, Robert Ridgway, George S. Davison, E. H. Rosenquest, Calvin W. Rice, Fred R. Low, John V. W. Reynders, A. L. Salt, Philip Torchio, J. Waldo Smith, George F. Kunz, C. Stanley Mitchell and Newcomb Carlton.

Mr. Williams read a telegram from Thomas A. Edison, honorary chairman of the committee, expressing regret at his inability to be present, and similar telegrams from Judge E. H. Gary, Secretary of Commerce Hoover, Secretary of War Davis, John Hays Hammond and others.

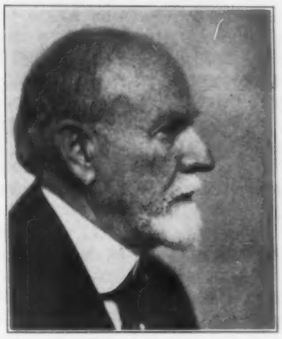
Mr. Lieb, before calling on the speakers chosen to represent various business and professional interests, sketched Mr. McGraw's career briefly.

Willits H. Sawyer, president of the American Electric Railway Association, told what Mr. McGraw's counsel and leadership had meant to the electric railway industry.

Gen. Guy E. Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, who was called on to represent the manufacturing interests, refused, in a witty speech, to "catalog" Mr. McGraw, but referred to him as a "practical philosopher" and said that idealism was one of the foundation stones on which the publisher had built.

Speaking for the light and power industry, Charles L. Edgar, president of the Edison Electric Illuminating Company of Boston, dwelt on the relation between journalism and the industry. Mr. McGraw, the speaker said, had the faculty of making the busy leaders of the electric light and power industry conntribute in their turn to the papers he publishes, drawing from these leaders their best thought. He was an outstanding example of the spirit of co-operation.

A scholarly address was contributed by Dean Dexter S. Kimball of the College of Engineering at Cornell University, speaking for engineers. Emphasizing the superior endurance of the written word as compared with that merely spoken, he associated Mr. McGraw and the publications of his company with the spirit of engineering and science.



JAMES H. McGRAW

Edward J. Mehren, vice-president of the McGraw-Hill Publishing Company, spoke for Mr. McGraw's associates in business, dwelling on the principles that the publisher had set up to govern his technical, trade and industrial papers. These papers, he said, Mr. McGraw desired to be collectors and distributors of information, interpreters of events and trends in their respective industries and promoters of sound thought and policy.

All the speakers paid personal tributes to the guest of the evening, in which the toastmaster joined.

Responding, Mr. McGraw attributed any accomplishment of his to two things—capable and loyal associates and the support of the professions and industries represented at the dinner. He expressed in warm terms his gratitude to the engineers and industrialists of America and asked their continued co-operation. When he had fought, the publisher said, he had done so without passion. His sole objective was accomplished, and when an object was attained there was no room for bitterness or jealousy over the apportionment of credit. Optimism, Mr McGraw observed, was an essential of leadership. There must be faith that sincere and earnest work will be rewarded. Edited in this spirit industrial papers would not only be human but vibrant with life and imbued with the ambition of high service. In his more than forty-one years of work the publisher had seen the civilized world made over. He rejoiced in the engineers and industrialists and the marvels they had wrought. Three score and six years, he declared in conclusion, had no terrors for him. It was no time to retire, but to press on to further endeavor, repaid by the fascination of work—the "joy of the job."

## Two 6,000-kw. Units for Plant of Idaho Power Company

Two additional units, each of 6,000-kw. capacity, are to be installed in the American Falls plant of the Idaho Power Company, Boise. These new units will utilize the increased flow at this plant during the summer months when water is being released from the government reservoir for irrigation purposes.

The equipment to be installed consists of two 9,000-hp. Francis vertical Allis-Chalmers turbines and two 7,500-kva. vertical Allis-Chalmers generators. The present capacity of the East Side plant, as it is known, is 15,000 kw. so that the addition of 12,000 kw. will give an ultimate capacity of 27,000 kw.

Two outdoor substations will be built, one at American Falls in which four 11,250-kva. General Electric transformers will be installed, and another at Shoshone Falls that will be equipped with four 10,000-kva. Westinghouse transformers.

The company also is planning to construct a transmission line from Shoshone Falls to American Falls to transmit power into its Pocatello division. This has been made necessary by the reduced winter flow at the American Falls plant, due to storage of water behind the new government dam for irrigation purposes. The line, which will tie in the Pocatello division with the interconnected system, will be about 80 miles long and will be built for and operated at 132 kv. when the voltage on the Thousand Springs-Ontario line has been stepped up to 132 kv. It will be a wood-pole line with 250,000-circ.-mil, 12-strand, copper cable conductor. Suspension insulators will be used, 10 in a string. The 44-kv. line from Thousand Springs to Shoshone Falls will be reconstructed to greater capacity.

The cost of the enlargement of the power plant is estimated at $800,000, that of the substations at $300,000 each, and of the transmission line $600,000.

## Department of Safety Added to Organization by Utility

A department of safety has been added by the Los Angeles Gas & Electric Corporation to its organization. This department is expected to form the nucleus of a broad and comprehensive safety-first movement which it is hoped ultimately will make itself felt throughout the entire organization.

J. R. Rowe, a safety engineer, has been employed to head this new department, with Vernon Taylor as his assistant.

# Federal Power Commission Reports on Work and Asks for Permanent Staff

Summarizing in its sixth annual report, recently released, the projects authorized by it, the Federal Power Commission states:

During the last fiscal year construction was started upon twenty new projects which will have, when completed, an installation of 1,220,000 hp., or 40 per cent of the total placed under construction during the preceding five years. Among these new projects are the Lock 18 development of the Alabama Power Company on the Coosa River in Alabama, with 180,000 hp.; the combined power and navigation development at the Falls of the Ohio, Louisville, Ky., with 135,000 hp.; the Conowingo development of 473,000 hp. on the Susquehanna River in Maryland and Pennsylvania, and five projects in California aggregating 417,000 hp. These projects bring the total of plants placed in operation or under construction under license of the commission since July 1, 1920, to 3,900,000 hp.

The report then deals with the general status of the commission's work which, it states, notwithstanding the record of work begun or completed and of permits and licenses issued during the last six years, considered from the standpoint of applications pending and upon which the commission has been unable to take action, is not satisfactory. This is due, the report states, to the lack of sufficient personnel and funds by which the commission is handicapped. It continues:

The commission has been able . . . in the six years of its administration to keep current the large number of minor cases, to weed out a considerable number of speculative applications, and to dispose of approximately one-half of the applications of primary importance. . . . . Except for changes in individuals, the commission has today only two more people on its staff than the force temporarily supplied in 1920. Its appropriations meantime have been reduced from the $100,000 made available in 1921 to $33,400 for the current fiscal year. It is apparent, therefore, that since the greater part of the time of the commission's force of nine engineers has in the past been devoted to dealing with major projects, it woud require several years' time to bring its work upon these projects up to date even if no new applications were filed; but new applications are being made at the rate of about 100 per year.

Discussing the handling of the annual charges collected from licensees, the report states that of the total charges collected 62 per cent are for reimbursing costs of administration, 28 per cent for use of government dams, and the remaining 10 per cent for use of public lands and reservations. It continues:

The charges to be collected for the purposes of reimbursing costs of administration on account of operations of the fiscal year 1927 are estimated at not less than $230,000, or 50 per cent in excess of the entire cost, direct and indirect, of the administration of the act for the year. The present scale of charges, nominal though it is, will, because of new projects coming into operation annually, increase the amounts collected for this purpose, and these amounts would be ample, by themselves, to pay the cost of the maintenance of a force sufficient to bring the work of the commission up to date and keep it there—all without a dollar of charge against the Treasury of the United States. The commission has no authority, however, to assess and collecte charges of this character, unless they are to be used for the purpose for which they are collected. . . . The only effective remedy for the unsatisfactory situation which now obtains is the one which the commission has been recommending annually, namely that all costs of the administration of the federal water power act be carried in appropriations made directly to the commission out of the moneys which are collected to defray such costs—and for no other purpose—such moneys to be segregated in the Treasury for such appropriations as Congress may deem necessary for the adequate administration of the federal water power act.

Under sections 19 and 20 of the federal water power act the commission is given power under certain conditions to regulate the issuance of securities by corporations which take out licenses or by any person, association, or corporation which may participate in the production, transmission, distribution, or sale in public service of power developed by licensed projects. Such jurisdiction or power is limited to those cases where there is no state agency authorized to regulate security issues. The first exercise by the commission of this authority occurred during the fiscal year covered by the report in connection with the Conowingo project being constructed on the Susquehanna River in Maryland, and several pages of the report are given over to a discussion of the financing program finally approved.

Under the subject, "Relation of Power Development to Recreational Facilities," the report discusses the conflict caused occasionally by applications for power projects involving the questions of scenic attraction or recreation. It cites two instances. In one case on Spirit Lake in Washington, the commission rejected the application on the grounds that the area was at present more valuable for recreation purposes, and that there was no local need for the power and no evidence of ability in the applicant to finance and develop the project. The other case is that of the Lake Chelan project in Washington where investigation indicated that recreational use and power development might proceed together without essential interference. In the words of the report:

In the development of power at this place it is proposed to raise the level of the lake some 16 ft. above its natural maximum, and at certain times of the year to draw the lake to its natural minimum—operations which will cause a variation of 21 ft. in the level of the water and involve submergence of a portion of the shore lands. After a series of local hearings in the state of Washington representatives of recreation interests agreed that the value of the power development to the adjacent territory outweighed the injury to recreation interests which would be involved in variations in lake levels. On reviewing the case, however, the commission reached the conclusion that adjustments could be made in the proposed operations of Lake Chelan with those of other reservoirs on the system of the Washington Water Power Company so as to preserve without substantial injury the scenic and recreational values of the lake during the recreation season. Conditions were, therefore, put in the license that wherever submergence of shore lands took place the areas should be cleared of all trees and brush and kept cleared in order that there might be no dead material projecting above the lake surface; while in order to avoid the drawdown of the lake and the exposure of unsightly shore line during the recreation season, provisions were placed in the license requiring the maintenance of lake levels at approimately the maximum during the period from June 15 to Sept. 15 of each year. This adjustment of draft between Lake Chelan and reservoirs on the Spokane River will result in little loss of power on the combined system of The Washington Water Power Company, and will at the same time give protection to scenic and recreation interests on the lake. The commission placed these limitations in the license after it own studies and upon its own motion, in the belief that it should take every practicable step to protect areas of scenic and recreational value.

The report closes with a short discussion of the second meeting of the world power conference which was held at Basle, Switzerland, Aug. 31-Sept. 8.

# News Briefs

**Damage Suits Against Power Company Dismissed.**—Eighty-six damage suits brought against the Pacific Gas and Electric Company, San Francisco, by the Hartford Insurance Company, based on the allegation that the breaking of a high-tension wire caused the fire in Berkeley, Calif., in which many blocks of property were destroyed, have been dismissed. The insurance company decided that the power company was not responsible for the damage and dropped the cases. Several hundred similar cases are still pending, based on the same allegation.

**Kennedy Mine on Mother Lode Adopts Electrical Operation.**—Installation of equipment necessary to change the operation of the hoisting works of the Kennedy gold mine in Jackson, Amador County, Calif., from steam to that of electricity has been completed. A new air compressor also has been installed so that all machinery about the mine now is operated electrically. The Kennedy, the last big mine on the Mother Lode to adopt the use of electricity, has a main shaft of 4,614 ft., said to be the deepest vertical shaft in North America.

**Election of Governor Hunt of Arizona Not to Be Contested.**—The election of George W. P. Hunt, Democrat, to his sixth term as governor of Arizona will not be contested, according to announcement of Judge E. S. Clark, unsuccessful Republican candidate. Previously it had been announced that Judge Clark would contest the election.

**Load Tests Made on Arc-Welded Steel Building.**—Load tests demonstrating the principles involved in the erection of the five-story, arc-welded, steel building erected at Sharon, Pa., by the Westinghouse Electric & Manufacturing Company recently were made no the building. A portion of the third floor sufficiently large to obtain some complete observations was loaded to twice the maximum load for which the floor was designed. The tests were entirely successful, the results proving to the satisfaction of those who witnessed them that this type of construction is applicable to any steel frame building.

**Downtown Street-Lighting Planned by Everett, Wash.**—The city of Everett, Wash., plans the installation of a new street lighting system in the downtown district. The frontage involved totals 36,914.01 linear feet, and a total area of 3,042,307.96 sq.ft. Of this area, 54.56 per cent has been reported, signed and verified after a check of petitions. Plans and specifications for the work will be prepared immediately.

**Aberdeen Utility to Install Auxiliary Fuel Oil System.**—Grays Harbor Railway & Light Company, Aberdeen, Wash., will expend $15,000 in installation of an auxiliary fuel oil system, which will supplement the hogged fuel burners now in use.

**Electrical League Changes Name.**—Electrical League of Utah is the new name of the Rocky Mountain Electric Co-operative League, Salt Lake City. The change was effected Dec. 7. The address remains the same, 215 Kearns Building.

**Utah Town Plans Street-Lighting System.**—The town of Morgan, Utah, is contemplating the installation of a modern street-lighting system.

# A. I. E. E.

**San Francisco Section** will meet in joint session with the P.C.E.A. Engineering Section at the Ryan Laboratory, Stanford University, Friday, Jan. 14, 1927. This promises to be the most interesting meeting of the year. Automobiles are to leave the Fairmont Hotel, San Francisco, in time to arrive at Stanford by 6 p.m. The usual dinner will be held prior to the meeting, but it will be served at the laboratory. Section members should return automobile registration cards to the transportation committee immediately upon receipt.

**Nominations** for candidates to fill the offices to be vacated Aug. 1, 1927, are announced by Institute headquarters as follows: for president—Bancroft Gherardi, vice-president and chief engineer, American Telephone & Telegraph Company, New York. For district vice-presidents, middle eastern—J. L. Beaver, associate professor of electrical engineering, Lehigh University, Bethlehem, Pa.; southern—C. O. Bickelhaupt, vice-president, Southern Bell Telephone Company, Atlanta, Ga.; north central—O. J. Ferguson, dean, college of engineering and professor of electrical engineering, University of Nebraska, Lincoln, Neb.; Pacific—E. R. Northmore, superintendent of electrical distribution, Los Angeles Gas and Electric Corporation; Canada, A. B. Cooper, general manager, Ferranti Electric, Ltd., Toronto, Ont. For managers—F. C. Hanker, manager central station engineering division, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; H. P. Liversidge, vice-president and general manager, Philadelphia Electric Company, Philadelphia, Pa.; E. B. Meyer, chief engineer, Public Service Production Company, Newark, N. J. For treasurer—G. A. Hamilton, electrical engineer (retired), Elizabeth, N. J.

**Associates Elected.**—G. S. Bailey, Great Western Power Company, San Francisco; J. G. Corrin, Pittsburgh Transformer Company, San Francisco; A. L. Jones, Utah Power & Light Company, Salt Lake City; J. P. Robinson, Kerite Insulated Wire & Cable Company, San Francisco; P. K. Seyler, Mountain States Telegraph & Telephone Company, Salt Lake City.

**Members Elected.**—J. W. Andree, Southern California Edison Company, Los Angeles; R. K. Blois, Consolidated Mining & Smelting Company of Canada, Ltd., Trail, B. C.; D. C. Green and J. A. Hale, Utah Power & Light Company, Salt Lake City.

# Northwest Electric Light & Power Association

## Commercial Section Committees Plan Work for the Year

To discuss plans of the various committees for the year's work the executive committee of the Commercial Section, Northwest Electric Light and Power Association, met at Portland, Dec. 3, at the call of its chairman, George C. Sawyer, sales manager, Pacific Power & Light Company, Portland. Of immediate importance to all members of the section and other interested persons was the decision to cahnges the dates for the two-day general meeting of the section from Feb. 10-11, 1927, as originally announced, to Feb. 7-8. This general meeting, which is the second annual affair of its kind, is to be held at the Multnomah Hotel, Portland. Following somewhat the plan of last year's gathering, all committees will report progress, and the free and open discussion which is expected to follow each report will be used to some extent in preparing the annual committee reports for the convention.

One of the outstanding accomplishments of the year is expected of the lighting committee headed by A. C. McMicken, general sales manager, Portland Electric Power Company, who reported that arrangements had been made to hold three lighting schools in the Northwest division. The Portland school is scheduled for the week of Feb. 14; Seattle, the week of Feb. 21; and Spokane, the week of Feb. 28. These will be conducted by Clark Baker, National Lamp Works, Oakland, Calif., assisted by leading illuminating engineers in each city. A course of five lessons adapted from the N.E.L.A. Course No. 2 will be used to give elementary instruction in commercial lighting layouts and window lighting. Classes will be limited to fifty regular students, it being the desire to accommodate twenty-five representatives of the contractor-dealers, ten from the commercial departments of the central stations and fifteen jobbers' salesmen. An entry fee of $10 will be charged but will be returned to the entrant if he attends all five sessions.

Considerable discussion centered around possible work for the merchandising committee, headed by R. M. Bleak, superintendent of lighting and appliance sales, Utah Power & Light Company, Salt Lake. Subjects suggested for study by this committee included seasonable monthly campaigns on different appliances, employee participation in sales work, salesmen's bonuses, and year-around activity on major appliances as against short intensive campaigns. In addition, the committee expects to recommend a form of merchandising organization for a company operating in a large city and having a number of small districts surrounding that city.

J. F. Orr, sales manager, Idaho Power Company, Boise, reported that the range committee would assist the national committee in compiling a manual of typical campaign set-ups. Some of the successful campaigns carried on by Northwest companies in the past will be set out in detail as a part of this manual. An additional part of the natioanl report will consist of a bibliography of electric-range literature, including articles on the economics of range load, on campaigns, sales methods, servicing and other pertinent matters, as published in committee reports and in the trade press during the past several years. This will comprise a ready reference of useful material for commercial men desiring to study various phases of range merchandising.

"What can the refrigeration committee do this year?" was the question brought to the meeting by R. B. McElroy, assistant sales manager, The Washington Water Power Company, Spokane. After some discussion no definite answer was forthcoming, and it was decided to set aside a period of time on the program of the February general meeting for discussion of the general subject of refrigeration.

B. P. Baily, district manager, Pacific Power & Light Company, Yakima, Wash., chairman of the competitive power committee, proposed that his committee gather data on the cost of

diesel engine operation to be used by power salesmen when selling power in cases in which this type of drive was being considered by the prospect.

For the street and highway lighting committee, F. H. Murphy, illuminating engineer, Portland Electric Power Company, reported that the three-year program of the national committee would be followed. The first year's program consists of collecting data on present installations to educate commercial departments to the value of the load. In addition, some of the second-year material may be gathered in the Northwest and made available to the members of this geographic division.

A study of the maintenance costs on heavy-duty equipment was proposed as a suitable endeavor for the commercial cooking committee by its chairman, J. C. Plankinton, sales manager, Northwestern Electric Company, Portland. A further suggestion offered was that this committee investigate and report on the operation of electric steam boilers such as have been used successfully in Salt Lake.

E. L. Crockatt, assistant to vice-president, Eastern Oregon Light & Power Company, Baker, Ore., chairman of the customer-relations committee, proposed that his committee report on successful methods used by companies to establish and maintain pleasant commercial relations with their customers. The method used by The Washington Water Power Company was cited as notable among apparently satisfactory practices.

A tentative proposal for reorganization of the section to provide for a continuity of committee work from one year to the next was discussed at some length. This matter is to be investigated further by a committee composed of Lewis A. Lewis, sales manager, The Washington Water Power Company, and A. C. McMicken, with George C. Sawyer as chairman, which will make a recommendation to the February meeting.

# Pacific Coast Electrical Association

## Engineering Section Schedule of Meetings Is Announced

The schedule for the second group meetings of the Engineering Section, P.C.E.A., to be held in San Francisco Jan. 12-14 at the Fairmont Hotel, is announced as follows:

| Committee | Wed. | Thur. | Friday |
|---|---|---|---|
| Accident Prevention | 10 a.m. | 9:30 a.m. | |
| Electrical Apparatus | .... | 9:30 a.m. | 9:30 a.m. |
| Hydraulic Power | 10 a.m. | 9:30 a.m. | |
| Inductive Co-ordination | | | 9:30 a.m. |
| Meters | 10 a.m. | 9:30 a.m. | |
| Overhead Systems | 10 a.m. | 9:30 a.m. | |
| Prime Movers | | | 9:30 a.m. |
| Safety Rules | | | 9:30 a.m. |
| Underground Systems | | | 9:30 a.m. |
| Executive Luncheon | 6 p.m. | | |
| (General) | | 12:15 p.m. | |
| Joint meeting with A.I.E.E. at Stanford University (dinner) | | | 6:00 p.m. |

One of the features of the meeting will be the luncheon to be held on Thursday, Jan. 13. The principal speaker on that occasion will be S. Waldo Coleman, president of the Pacific Coast Electrical Association.

Following the dinner, Dr. Ryan will give a demonstration of the new 2,100,000-volt equipment in the Ryan Laboratory. Those desiring to attend this dinner should be sure to make reservation with the chairmen of the committees of which they are members.

Reservations for hotel accommodations should be made direct with the hotel, with mention of the Pacific Coast Electrical Association.

## "Behind the Scenes" Revealed to Advertising Section

Laying bare the mechanics of advertising production, not only from the standpoint of the methods of planning and organizing the advertising program for the year, but also from the typographical and photo-engraving angles, the afternoon program or general open meeting of the Advertising-Publicity Section, held in Los Angeles Dec. 3, proved itself a meeting of much worth and many revelatory ideas. The meeting was attended not only by members of the section but by a number of interested visitors, people of the electrical industry to whom the subject previously had been announced.

The program divided itself into three sections. Richard E. Smith, Southern California Edison Company, chairman of the section, appointed Al Joy, San Joaquin Light & Power Corporation, to preside over the "Behind the Scenes" program in the absence of Dan Scott, Los Angeles Gas & Electric Corporation, due to illness.

"Behind the Scenes in a Public Utility Advertising Department," the first part of the program, was opened by J. Charles Jordan, advertising and publicity director, Pacific Gas and Electric Company. Mr. Jordan in an illustrated lecture outlined the numerous and varied methods of advertising and publicity engaged in by his company.

Richard E. Smith, advertising manager, Southern California Edison Company, next outlined the methods used by his company to budget the appropriation for advertising to cover the needs of the year. He advocated no hard-and-fast rule for budgeting of advertising, demonstrating rather that advertising must be governed by the necessities of the occasion.

By far the most interesting feature of the program was the talk given by James H. Pollard, general manager, Coast Valleys Gas & Electric Company, in which he gave complete figures on his company's budget appropriations and then compared the budget with actual expenditures. He previously had prepared a complete summary of advertising and publicity expenditures, grouped them in logical order, and written them upon a large sheet of paper from which he was able to discuss each item in full view of all present.

### With the Photo-Engraver and Typographer

Ralph L. Garnier, proprietor of the Garnier Engraving Company, was the speaker for the second part of the program, taking his audience behind the scenes in an engraving plant, explaining the various processes necessary to good engraving. He outlined briefly the history of engraving and recited its limitations. He urged giving engravers enough time to do good work.

Henry Mayers, president of the Mayers Company, concluded the program of the afternoon with an interesting discussion of the steps necessary to the production of well designed and executed advertising copy, either in straight type or in mat or electrotype form.

### Vice-President Talks at Luncheon

W. L. Frost, vice-president of the Pacific Coast Electrical Association, joined the section at its noon luncheon. He gave a brief informal talk on the part the Advertising-Publicity section must play in the commercial development of the future. Load-building he characterized as a function of advertising.

"The commercial departments of power companies," he said in part, "have blown hot and then blown cold in the past." Sales forces have been built up and then let go because power construction had not been able to keep up with the commercial demand, he pointed out, and expressed the hope that with plans now under way for still greater equipment and plants both in steam and hydro, the load-building work could continue unhindered. He ended with a final admonition that the use of electricity be popularized, rather than merely merchandise.

At the morning session, a business meeting, the advertising committee of the Public Relations Section first held the floor. A. B. West, chairman of the Public Relations Section, was present and took part in the discussion of good will advertising on a co-operative basis by all companies.

The Red Seal plan of adequate home-wiring received the endorsement of the group, and more advertising of power companies next year will feature this movement. The slogan, "Electricity Is Cheap, Use More of It," will be used

this year wherever possible in advertising.

A motion was passed recommending to the Public Relations Section that it give serious consideration to the idea that the Pacific Coast Electrical Association engage a trained public speaker as director of public relations for the association.

## Effective Methods Studied by Purchasing-Stores Section

Four main topics and a discussion of them occupied the second meeting of the Purchasing and Stores Section of the Pacific Coast Electrical Association held in San Francisco, Dec. 2-3, 1926, under the chairmanship of C. D. Weiss, San Diego Consolidated Gas & Electric Company. The group meeting was well attended, and interest in the papers was reflected in the animated discussion which followed each one.

William de Waard, San Diego Consolidated Gas & Electric Company, was named secretary for the section at the opening of the meeting Feb. 2. The first paper, Purchasing Policies, was read by C. R. Eccles, Western States Gas & Electric Company. It was followed by discussion by J. H. Hunt, Pacific Gas and Electric Company, and D. P. Mason, San Joaquin Light & Power Corporation, under the subject of Reciprocity in the Purchase of Materials from Our Consumers. It was declared policy to distribute purchases among consumers, insisting upon prices which would compare favorably with outside competitors.

In a paper on Material Control, by H. O. McKee, Southern California Edison Company, the subject of Unit Piling Systems brought forth considerable discussion. The advisability of seeking to have the larger manufacturers keep complete stocks on hand in Pacific Coast offices was talked over at some length. Opinion was unanimous that such stocks would aid greatly in utility storekeeping.

Other subjects discussed were: Stores Department Building Facilities and Material Handling Devices, by William Maddock, Los Angeles Gas & Electric Corporation; Interchange of Surplus Material, by F. W. Smith, Great Western Power Company. As a result of these papers lists of surplus materials are to be criculated between companies for mutual exchange and purchase. Standard Methods of Securing Executive Action on the Year's Work was discussed by C. D. Weiss, chairman of the section.

The next day was spent in visits to the Pacific Gas and Electric Company's storeroom at Emeryville, under the guidance of G. C. Robb, and to the mills of the Columbia Steel Corporation. The latter entertained the section at luncheon and then divided it into small groups which were personally escorted through the plant.

It was decided that the third meeting of the section would be held in San Diego, Feb. 17-18, when the subcommittee chairmen will submit the final papers on the subjects assigned them.

## Chairman of Commercial Section Announces Organization

Organization of the Commercial Section of the Pacific Coast Electrical Association for the year 1926-1927 has been announced by H. K. Griffin, section chairman.

These committee appointments follow:

### EXECUTIVE COMMITTEE

Griffin, H. K., Western States G. & E. Co., chairman.
McWhinney, W. C., So. Cal. Edison Co., vice-chairman.

Baker, Clark, National Lamp Works.
Bigelow, G. T., So. Sierras Pwr. Co.
Case, J. O., General Electric Co.
Courtright, H. H., Valley Elec Supply Co.
Crawford, H. M., P. G. and E. Co.
Frost, A. M., San Joaquin L. & P. Corp.
Holloway, A. E., San Diego Cons. G. & E. Co.
Nicoll, A. H., Graybar Electric Co.
Pollard, J. F., Coast Valleys G. & E. Co.
Ray, D. C., P. G. and E. Co.
Rice, H. C., So. Cal. Edison Co.
Smith, G. D., Ontario Pwr. Co.
Tenney, G. C., Electrical West.
Wales, Morris, Coast Valleys G. & E. Co.
Wrenn, J. W., Great Western Pwr. Co.

### GENERAL COMMITTEE

Smith, Glenn D., Ontario Pwr. Co., chairman.
Graef, W. P., So. Cal. Edison Co., vice-chairman.

**Customer Relations Committee**

Graef, W. P., So. Cal. Edison Co., chairman.
Cage, Albert, So. Sierras Pwr. Co.
Randlett, H. H., L. A. G. & E. Co.
May, Alfred, San Diego Cons. G. & E. Co.
Henley, Lloyd, San Joaquin L. & P. Corp.
Rankin, G. M., California Electrical Bureau.

**Organization Committee**

Pollard, J. F., Coast Valleys G. & E. Co., chairman.
Smith, Glenn D., Ontario Pwr. Co.
Griffin, H. K., Western States G. & E. Co.

### POWER AND HEATING COMMITTEE

McWhinney, W. C., So. Cal. Edison Co., chairman.
Frost, A. M., San Joaquin L. & P. Corp., vice-chairman.

**Agricultural Power Committee**

Frost, A. M., San Joaquin L. & P. Corp., chairman.
Murray, E. D., Coast Counties G. & E. Co.
Bigelow, Geo., So. Sierras Pwr. Co.
George, P. S., Coast Valleys G. & E. Co.
Pine, P. P., San Diego Cons. G. & E. Co.
Allen, F. L., Ontario Pwr. Co.
Brillhart, H. E., Great Western Pwr. Co.
Cates, R. H., So. Cal. Edison Co.
Neiman, W. F., P. G. and E. Co.

**Industrial Heating Committee**

Cipperly, E. J., General Electric Co., chairman.
Lee, Max, Westinghouse E. & M. Co.
Criddle, E. B., So. Sierras Pwr. Co.
Boxall, W. L., So. Cal. Edison Co.
Kane, E. V., L. A. Bureau of Pwr. and Lt.
Fogwell, H. H., Everhot Elec. Sales Co.
Knapp, J. H., 4920 Loma Vista St., Los Angeles.
Pine, P. P., San Diego Cons. G. & E. Co.
Weiss, Frank, Los Angeles G. & E. Co.
Sutor, W. F., 1315 E. 7th St., Los Angeles.
Owens, C. R., General Electric Co.
Lohse, M. P., San Joaquin L. & P. Corp.
Sullivan, C. R., Westinghouse E. & M. Co.
Walsh, W. J., Great Western Pwr. Co.
Farley, J. L., P. G. and E. Co.
McAllister, D. G., Pacific Scientific Co.

**Commercial Cooking Committee**

Wrenn, J. W., Great Western Pwr. Co., chairman.
Courtright, H. H., Valley Elec. Supply Co.
Anderson, O. F., Great Western Pwr. Co.
Adams, W. R., P. G. and E. Co.
Cole, G. W., Edison Elec. Appliance Co.
Frances, L. A., Edison Elec. Appliance Co.

**Competitive Power Committee**

Schafer, W. C., P. G. and E. Co., chairman.
Baer, W. P., P. G. and E. Co.
Rhine, M., General Electric Co.
Wheelock, D. B., So. Sierras Pwr. Co.
Lohse, M. P., San Joaquin L. & P. Corp.

**Electric Truck Committee**

Dazey, K. I., Commercial Truck Co., chairman.
Boerner, L. F., Electric Storage Battery Co., vice-chairman.
Walsh, W. J., Great Western Pwr. Co., secretary.
Canavan, J. J., Canavan Motors Corp., Los Angeles.
Easterbrook, H. D., Westinghouse E. & M. Co., Los Angeles.
Pine, P. P., San Diego Cons. G. & E. Co.
Lohse, M. P., San Joaquin L. & P. Corp.
Griffin, H. K., Western States G. & E. Co.
Anderson, A. J., Mercury Tractor Co.
Farley, John L., P. G. and E. Co.
Hunt, E. A., General Electric Co.
McWhorter, C. L., Philadelphia Storage Battery Co.
Moulton, J. F., Great Western Pwr. Co.
Perin, Ira G., Elwell Parker Co.
Wakeman, G. F., Edison Storage Battery Co.
Seger, Carl, Walker Vehicle Co.

### MERCHANDISING COMMITTEE

Wrenn, J. W., Great Western Pwr. Co., chairman.
(Vice-chairman not yet appointed.)

**Domestic Range Committee**

Pine, P. P., San Diego Cons. G. & E. Co., chairman.
Rice, R. C., So. Cal. Edison Co.
Allen, F. L., Ontario Pwr. Co.
Clifford, O. S., Truckee River Pwr. Co.
Bragg, R. C., Vallejo L. & P. Co.
Farrand, R. E., Coast Counties G. & E. Co.
Fleming, W. S., So. Sierras Pwr Co.
Frost, A. M., San Joaquin L. & P. Corp.
McFadden, R. C., So. Cal. Edison Co.
Perkins, E. F., P. G. and E. Co.
Taylor, David G., Great Western Pwr. Co.
Wood, E. V., Coast Valleys G. & E. Co.
Ferguson, G. A., Western States G. & E. Co.

**Air Heating Committee**

Wilcox, E. A., 419 Call Bldg., San Francisco, chairman.
Kempston, Arthur, Apex Elec. Sales Co.
Doerr, O. R., Great Western Pwr. Co.
Hicks, W. Wesley, "Wesix."
Forsyth, O. W.
Bragg, Roy, Vallejo L. & P. Co.
Strauch, Adolph.
Mulvaney, H. E.

**Refrigeration Committee**

Buss, Gardner, P. G. and E. Co., chairman.
Hartley, V. W., California Elec. Bureau.
Norton, E. A., Barker Bros., Inc.
Cochran, W. L., Manager, "Frigidaire."
Robertson, L. D., "Kelvinator."

**General Merchandising Committee**

Goldrick, H. C., Graybar Electric Co., chairman.
Tompkins, R. E., Pacific States Elec. Co.
Cram, H. A., Edison Elec. Appliance Co.
Musladin, Charles, Alexander & Lavenson.
Tassie, B. M., Manning, Bowman & Co.
Holabird, Graham, Graybar Electric Co.
Ferry, J. W., Electric Household Util. Corp.
Manuel, D. S., Fobes Supply Co.
Foster, M. L., Coast Counties G. & E. Co.
Rey, T. W., Pacific States Elec. Co.
Ford, Frank E., Easy Housekeeping Shop.
Jamison, J. H., Westinghouse E. & M. Co.
May, Albert, San Diego Cons. G. & E. Co.
Norton, E. A., Baker Bros., Inc.
Guilfoyl, J. W., Landers, Frary & Clark.
James, C. J., Electric Vacuum Cleaner Co.
MacFarlane, D. D., Newberry Electric Corp.
Rice, H. C., So. Cal. Edison Co.

### LIGHTING COMMITTEE

Baker, Clark, Sr., National Lamp Works, chairman.
Dellmann, G. H. P., vice-chairman.

**Industrial Lighting Committee**

Prussia, R. S., Westinghouse Lamp Co., chairman.
Chawner, W. R., So. Sierras Pwr. Co.
Gianini, Leo G., Edison Lamp Works.
Hartley, V. W., California Elec. Bureau.
Pence, D. C., Illinois Electric Co.

**Commercial Lighting Committee**

Simpson, T. W., Elec. Products Corp, chairman.
Butterfield, E. R.
Foster, M. L., Coast Counties G. & E. Co.
Masson, C. M., So. Cal. Edison Co.
Robison, H. H., P. G. and E. Co.

**Street and Highway Lighting Committee**

Koch, K. M., General Electric Co., chairman.
Beardsley, F. D., Coast Counties G. & E. Co.
George P. S., Coast Valleys G. & E. Co.
Janes, T. J., Western States G. & E. Co.
Lohse, M. P., San Joaquin L. & P. Corp.
Dellmann, G. H. P., San Diego Cons. G. & E. Co.
Woodward, F. H., Great Western Pwr. Co.
Monteith, C. D., P. G. and E. Co.

# Contractors, Dealers and Inspectors

## Northwest Inspectors Announce Program For Portland Convention

Two sessions of committee reports and administrative business and two sessions of discussion of pertinent questions are scheduled for the second annual meeting of the Northwest Association of Electrical Inspectors, Jan. 17-18, 1927, at the Multnomah Hotel, Portland, according to the official program sent to members last month.

The opening session on Monday morning will be taken up with addresses of welcome and response, secretary's report, president's address and appointment of committees, and in addition a paper on The Power Company and Its Relation with Inspectors, Contractors and Consumers, by T. S. Swartz and G. A. Drewett, Northwestern Electric Company, Portland. At the afternoon session three papers will be presented as follows: Diversity of Range Loads as Affecting Wiring Installations, by R. E. Thatcher, Puget Sound Power & Light Company, Seattle; Electrical Hazards and their Elimination in the Grain and Milling Industry, by N. J. Sankela, Mutual Fire Insurance Company, Seattle; and Fire Alarm Protection for Hotels and Rooming Houses, by C. W. Lynch, city fire alarm system, Seattle.

The Tuesday morning session includes discussion of the following papers: Our Choice—One Code or Babble, by W. J. Canada, electrical field secretary, National Fire Protection Association, New York; Electrical Transmission and Distribution System in the Mills of the Long Bell Lumber Company, Longview, Wash., by L. D. Beach, chief electrical engineer of that company; Electrical Inspection of Industrial Plants, by W. E. Roberts, electrical inspector, Portland; and Eliminating Sub-standard Electrical Appliances, by J. C. Caine, electrical inspector, Portland. The afternoon session of that day will be devoted to reports of standing committees, election of officers and other administrative business.

A new feature of this year's meeting is the manufaturers' show in the hotel, which will take the form of educational exhibits of electrical equipment, and which will be open for the inspection of the delegates at all times when the convention is not in session. For entertainment a banquet is scheduled for Tuesday evening, and additional entertainment for the ladies will be provided by a committee of which Mrs. F. D. Weber, wife of the secretary of the association, is chairman. On Wednesday, Jan. 19, interesting inspection trips will be provided for those desiring to remain over.

Electrical inspectors of British Columbia have been invited to attend the convention and a special invitation has been extended to any members of the California Association of Electrical Inspectors who may be able to attend the Northwest Association's convention.

L. W. GOING
President, Northwest Association of Electrical Inspectors.

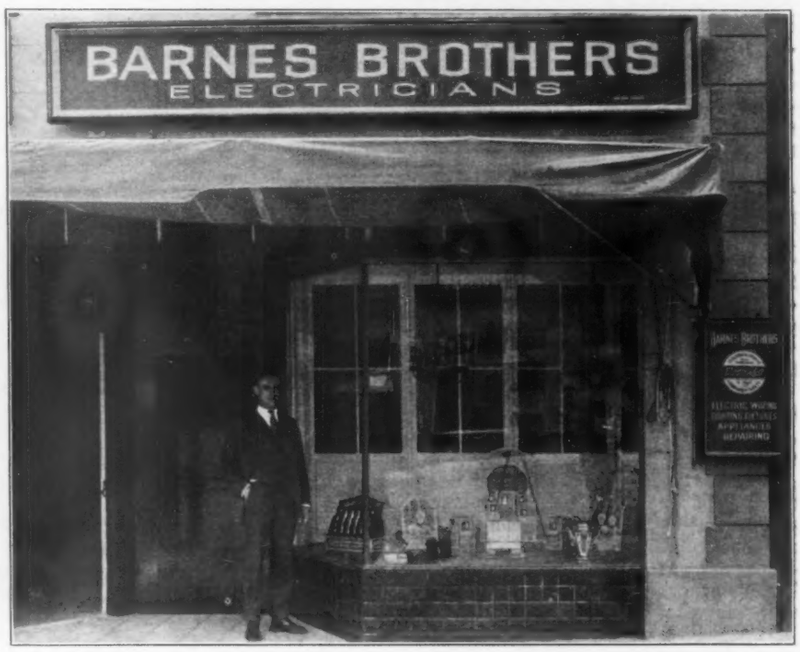
### Prominent Oregon Contractor Sells to Minnesotan

B. W. Paul, for some years proprietor of Paul's Electric Store, Medford, Ore., recently sold his interest in his company to Val J. Fischer, formerly of Bell Plane, Minn. The company is to continue under the name of the Fischer-Scheffel Electric, Medford, Ore. A contest for the name of the new concern was held recently, offering a large radio set as a prize. There were 2,137 names submitted in the contest and of the winning name 97 were submitted. These names were drawn from a hat, the third one withdrawn being awarded the prize. Mr. Paul stopped on his way to Pasadena, where he will spend several months vacationing, to visit old friends in San Francisco.

**R. A. Maclennan,** contractor-dealer of Newman, Calif., recently spent a few days in San Francisco.

The firm of Davis Electric Company, Ontario, Calif., includes Mrs. as well as Mr. D. L. Davis.

## *He Was Only an Electragist Then—*




But now Hobart W. Barnes, alias Hob, is not only an Electragist, the assistant secretary of the California Electragists, Southern Division, to be exact, but he is also a benedict. Hob went back to Syracuse, N. Y., last month to bring his bride to California. On his way he stopped at Chicago, Detroit, and other Eastern cities to see just what contractors are doing in what Rob Warner once termed "Elsewhere," meaning outside the realm of native sons. Barnes Brothers' establishment is located at 1559 North Lake Ave., Pasadena.

## San Francisco Association's Officers Re-elected

What amounts to a re-election of all officers of the San Francisco Association of Electrical Contractors and Dealers was the nomination last month of Charles Shipman, Atlas Electric Company, as president; S. Radelfinger, Radelfinger Brothers, as vice-president, and Vic Lemoge and Edward Martin, Sterling Electric Company, as members of the executive committee in addition to the president and vice-president. The same officers served last year.

**Code Approved.**—Approval of a complete state electrical code drafted by the Washington State Chamber of Commerce was given at a recent meeting of three special committees of the state chamber in Seattle, Wash.

**The Victory Electric Company** and **Victory Hardware Company,** 8060 Bothel Way, Seattle, have been consolidated by purchase of the hardware company by the Victory company, and will specialize in contract wiring and all forms of radio work. **Bert Lundahl** is manager.

E. A. Stewart, the reason for the name and fame of the Stewart Electric Shop in Riverside, Calif.

### *Announce San Francisco Contractors Banquet*

**Always referred to as the greatest event of the year for the San Francisco Electrical Contractors and Dealers Association is the annual banquet. Plans for the 1927 banquet of this association have now reached the final stages and everything is ready for the event, which is to take place at the Clift Hotel, Jan. 15.**

**The annual banquet takes the form of a dinner dance and will be held in the main dining room of the hotel. The occasion will be informal and an open invitation to all members of the electrical industry has been extended by the Contractors and Dealers Association. About 250 are expected to be present at the affair. The dinner is scheduled to start at 6:30 p.m.**

**Victor Lemoge, chairman of the banquet committee and his assistants, Charles Lyman, Walter Mobley and Dave Carlson, have planned an unusual entertainment program for the evening. Dancing will follow the entertainment to the tune of Ruge's seven-piece orchestra —well known in San Francisco.**

**Lemoge has announced that tickets at $5 per plate will be available to members of the electrical industry and may be obtained from members of the committee or at the association office in the Call Building, San Francisco.**

**Hawes Electric Works** of Monterey, Calif., has just completed the electrical installation for the new San Carlos Canning Company cannery located at Monterey.

**The Scott Bros. Electric Company,** Denver, has moved into larger quarters at 531 15th Street. The Scott brothers are prominent Electragists of that city.

Shirtsleeves signify "hard at work" and F. A. Rounsaville, of the Porterville Electric Company, Porterville, Calif., is always in that state of activity.

**John Bradfield,** Electragist of Owensmouth, was a recent business visitor to Los Angeles.

**J. A. Clark, C. J. Campbell** and **C. B. Batman,** constituting what is termed the Westinghouse sales promotion team, were the principal speakers at a meeting held last month in Denver. The meeting was attended by some 150 local electrical dealers and contractors.

**Ne Page-McKenny Company,** Armour Building, Seattle, on a bid of $17,121, received contract for installation of a street lighting system on Madison Street, et al., Seattle. The Ne Page-McKenny Company also has the contract for installing a street lighting system on Tenth Avenue Northeast, from the University Bridge to Ravenna Boulevard, on a bid of $38,481.

# Proceedings of California and Northwest Inspectors Associations Off the Press

An attractive, well printed and well arranged book is the 1926 Annual of the California Association of Electrical Inspectors and of the Northwest Association of Electrical Inspectors, both of which combined during 1926 to publish the proceedings of their respective activities for the year in one book.

Through co-operation with the Society for Electrical Development and supporting members of the associations the proceedings booklet comes out as a 248-page paper-bound annual printed on good book stock. A price of $3 has been announced for the book although copies have been sent to members of both associations as part of the year's activities.

The annual starts out with the articles of association of both associations. Then follows a brief review of the 1925 meetings of the California Association of Electrical Inspectors, followed by complete report of the first annual meeting of the Northwest association, held in Portland, Jan. 11-12, 1926.

The proceedings of the fifth semi-annual meeting of the California association, held at San Diego, March 22-23-24, 1926, is next given in detail. Following these proceedings complete lists of members of both associations are given, together with their addresses. The lists are classified according to the type of membership held. A complete index of the book is then given and a photograph of the gathering at the meeting in San Diego of the California inspectors concludes the book. A number of diagrams on grounding illustrate points brought out in discussion in the proceedings of the Northwest association.

The book is replete with interesting discussions and contains many fine papers read at the association meetings. Since the proceedings were taken down verbatim by court stenographers every item of discussion is registered, making the whole an interesting and a wholly human document. Copies of the proceedings are obtainable from either association.

Believes in bringing up the younger generation in the way it should go, does Philip Mayer, of Mayer & Boyce, San Diego Electragists. Father and son are shown here in front of the company's office and shop.

**H. B. Kirkland,** vice-president, uniform code committee of the National Electrical Manufacturers' Association, visited Denver in November and consulted with members of the Electrical League of Colorado who are assisting in the preparation of a revised electrical code for the city. In his honor a luncheon was arranged and attended by members of the league's advisory board.

# Personals

**James T. Deppe,** former manager of the radio department of the Pacific States Electric Company in Los Angeles, has been made manager of the Phoenix office of that organization. Born in Belleview, Ky., Mr. Deppe received his public school education in Cincinnati, Ohio, and attended high school in Los Angeles. On completion of high school he joined the Edison

JAMES T. DEPPE

Electric Appliance Company at Ontario, Calif., leaving there to take the commercial course at the Chaffee Junior College in Ontario. Upon completion of that course he again joined the Edison Electric company as manager of its Los Angeles service station. He left there to enlist in the navy during the war and served with the Signal Corps at Hampton Roads, Va. Upon his discharge at the end of the war he rejoined the Edison Electric Appliance Company as salesman, leaving to enter the employ of the Pacific States Electric Company in the same capacity. He later was made manager of the Pacific States Company's radio department.

**C. E. Grunsky,** prominent civil engineer of San Francisco and past president of the American Society of Civil Engineers, accompanied by his daughter, Miss Clotilde Grunsky, Pacific Coast editor of Electrical Merchandising and Radio Retailing, will leave Jan. 10 for New York whence they will sail for Europe.

**L. T. Merwin,** vice-president and general manager, Northwestern Electric Company, Portland, paid a visit to San Francisco a short while ago.

**Maj. Nathan Levinson,** for the past year in charge of radio station KPO in San Francisco and prior to that connected with the Western Electric Company, has resigned to join the organization of Warner Bros. Studio. His work will have to do with the development of the Vitaphone in relation to moving pictures.

**Paul B. McKee,** formerly vice-president and general manager of The California Oregon Power Company, left San Francisco with his family Dec. 31 for New York to take a position in an executive capacity with the American & Foreign Power Company, which is a subsidiary of the Electric Bond & Share Company. Mr. McKee was graduated from Stanford University in 1914 with the degree of A.B. in electrical engineering. At present he is president of the Stanford Alumni Association.

**Charles R. McCormick,** president, Charles R. McCormick Lumber Company, San Francisco, spent several days in Portland, Ore., shortly before Christmas.

**W. R. Matthews,** formerly illuminating engineer with The Washington Water Power Company, Spokane, now is connected with The Miller Company, with headquarters in San Francisco.

**J. A. Kahn,** president of the Capital Electric Company, Salt Lake City, and **E. E. Brazier,** sales manager of the same company, were among those who addressed a recent meeting of Radiola dealers of the Intermountain territory held in that city.

**Alfred E. Waller,** chief engineer, Ward Leonard Electric Company, Mount Vernon, N. Y., has been appointed managing director of the National Electrical Manufacturers Association. He has been active in the affairs of the Electrical Manufacturers Council and served for two years as president of the Electric Power Club. Both of these organizations are included in the new association.

**W. A. Moser,** of the Westinghouse Electric & Manufacturing Company, Salt Lake City, recently spent some time in Idaho on a business trip.

**John B. Miller,** president, Southern California Edison Company, Los Angeles, recently returned to that city from a trip to the East.

**J. M. Perlewitz,** of the Graybar Electric Company, Salt Lake City, spent some time in Idaho on business recently.

**Guy Barker,** of Johns-Manville, Inc., San Francisco, returned a short time ago from a trip through the Northwest.

**Heckert Parker,** sales manager of the radio department of the Magnavox Company, Oakland, Calif., has gone to New York where he will remain for about three months.

**Prof. L. J. Fletcher,** for the past six years in charge of the work of the agricultural engineering division, College of Agriculture, University of California, has resigned to accept a position with the Caterpillar Tractor Company, with headquarters in Peoria, Ill.

**P. H. Booth,** vice-president, Edison Electric Appliance Company, Los Angeles, has left to attend the annual conference of officers and directors of the company in Chicago. Mr. Booth plans to visit New York also.

**C. E. Heise,** district manager for the Westinghouse Electric & Manufacturing Company in San Francisco, has returned from a seven weeks' trip to the East. He attended the district managers' meeting at St. Louis and later spent some time at the Westinghouse works in East Pittsburgh and Philadelphia. Mr. Heise returned to San Francisco by boat via the Panama Canal.

**Horace L. Masterson,** executive secretary of the Spokane Manufacturers' Association, Spokane, Wash., has resigned to join the executive staff fo the Electro-Kold Corporation of that city.

**L. A. Nott,** Pacific Coast representative of the Sangamo Electric Company with headquarters in San Francisco, is planning a trip East that will include Springfield, Ill., the home office of the company. He also expects to visit New Orleans.

**Richard E. Smith,** advertising manager, Southern California Edison Company, Los Angeles, recently spent some time in San Francisco on company business.

**A. V. Guillou,** for the past three years gas and electrical engineer for the California Railroad Commission, has been appointed assistant chief engineer for the Commission. Prior to his connection with the Railroad Commission Mr. Guillou was associated with a number of California power companies. After his graduation from the University of California with the class of 1912 he spent a year with the

A. V. GUILLOU

Westinghouse Electric & Manufacturing Company and then joined the Pacific Light & Power Corporation, later merged with the Southern California Edison Company, as commercial salesman. Later he became district manager for the Mt. Whitney Power & Electric Company. When that company was taken over by the Edison company in 1920 Mr. Guillou joined its engineering department but left in April of that year to become affiliated with the California Railroad Commission as assistant engineer. Three years later he was appointed gas and electrical engineer, a position in which he has specialized on condemnation cases.

**C. D. Slaughter,** secretary of Allied Industries, Inc., San Francisco, accompanied by **C. C. Hillis,** vice-president, recently left for the East to call on the firm's different factory connections. They are expected to return about Jan. 15.

**R. C. Nash,** treasurer of the Capital Electric Company, Salt Lake City, made a business trip to Butte, Mont., a short while ago. **Elmer Jonsson,** of the same company, recently spent two weeks in Idaho.

**M. A. Vreeland,** formerly associated with the Springfield Gas, Electric & Traction Company, has been made superintendent of the New Mexico Power Company, Santa Fe, N. M., succeeding **A. J. Griffin,** who recently resigned after some thirty years service with the company.

**W. A. Knost,** appliance sales manager, Ilinois Electric Company, Los Angeles, has been elected to the commandership of the Hollywood Post of the American Legion.

**Henry H. Henline,** associate professor of electrical engineering at Stanford University, Palo Alto, Calif., has been appointed assistant national secretary of the American Institute of Electrical Engineers, with headquarters in New York. Professor Henline was born in Colfax, Ill., in 1889, and was graduated from the University of Illinois in the electrical engineering course in 1914. After three years experience in Chicago, he became an instructor at Stanford University in 1917 and later was made associate professor of electrical engineering. Mr.

PROF. HENRY H. HENLINE

Henline has been deeply interested in the Institute for many years and is well equipped by training and experience, including personal participation in Institute activities, for his new work. Elected to membership in 1919, he has presented several papers at institute conventions. He was elected chairman of the San Francisco Section in 1922 and is at present counselor of the Institute branch at Stanford University. At the recent Pacific Coast convention in Salt Lake City he was elected, by his associate counselors in the Pacific district, chairman of the committee on student activities for that district.

**Ben S. Cohen,** president, General Appliance Corporation, San Francisco, returned to that city from New York shortly before Christmas. He was accompanied by **Milton H. Shoenberg** also of that company. Mr. Cohen plans to return to New York shortly after the first of the year.

**Jerome A. Duffy** is still empolyed in the legal department of the Great Western Power Company, San Francisco, the statement to the contrary that appeared in the Dec. 15 issue of the Journal of Electricity having been published through a misunderstanding of the facts.

**E. N. Hoffman,** auditor, Coast Valleys Gas & Electric Company, Salinas, Calif., recently returned from a meeting of the auditors of all the Byllesby properties held in Pittsburgh, Pa.

**R. M. Bleak,** of the Utah Power & Light Company, Salt Lake City, made a business trip East a short time ago.

**Lorenzo Lepori,** director of hydrography for Argentina, has been sent to this country to study methods of flood control and to familarize himself with hydroelectric and irrigation development. He will spend six months in the United States. The water resources division of the Geological Survey is planning his trip so that he will be able to inspect the more important flood control works and hydroelectric developments.

**J. C. Pentz,** formerly sales manager of the Reiman Wholesale Electric Company, Los Angeles, has been named assistant manager of that comany. **Jack Shay,** formerly of the credit department of the Myers Electric Supply Company, Inc., of that city, has been appointed to succeed Mr. Pentz as sales manager of the Reiman company. **L. E. Clark** will continue in his position as vice-president and general manager of that company.

**Charles Grunsky,** since 1922 assistant engineer in the gas and electric division of the California Railroad Commission, has been appointed gas and electric engineer for that body, succeeding **A. V. Guillou,** promoted to be assistant chief engineer. Mr. Grunsky has been connected with the commission since 1914. **J. G. Hunter,** who has been in the employ of the commission since 1920 and since 1924 has represented the transportation division in the Los Angeles office, has been made transportation engineer, succeeding **A. G. Mott,** recently appointed chief engineer to succeed **Lester S. Ready.** Mr. Hunter is a graduate of the University of Utah and was employed for a number of years in the office of the city engineer of Portland, Ore., and later in the U.S. Geological Survey.

**T. T. Lyman,** one of the directors of Johns-Manville, Inc., and general manager of its western division, spent some time in Salt Lake City a short time ago. **L. H. Ingles,** district manager for the company, with headquarters in Denver, accompanied Mr. Lyman to Salt Lake.

**F. J. Rankin,** since October, 1921, chief engineer with the Idaho Power Company, Boise, has resigned to join the organization of the Phoenix Utility Company, New York. After his graduation from the University of Kentucky in 1907, Mr. Rankin entered the employ of the General Electric Cmopany, and then joined the Commonwealth Edison Company in Chicago. Later he became associate professor of electrical engineering at the Colorado State College. For four years he served as chief engineer of the Public Utilities Commission of Colorado and spent one year in private practice. In the sum-

F. J. RANKIN

mer of 1919 he went to Boise to enter the engineering department of the Idaho Power Company, and about two years later he was made chief engineer of that company. Mr. Rankin has been active in affairs of the electrical industry in the Northwest and was appointed chairman of the Engineering Section, Northwest Electric Light & Power Association, for 1926-1927, a post which his new affiliation of course has obliged him to resign. He is also an active member of the American Institute of Electrical Engineers and of the National Electric Light Association. **Henry L. Senger,** formerly assistant engineer with the Idaho Power Company, has been appointed Mr. Rankin's successor.

## Obituary

**Fred W. Wilson,** until recently Salt Lake City agent for the Standard Underground Cable Company, died suddenly in that city Dec. 17.

**Erich Buehle,** since 1906 hydraulic turbine designer for the Pelton Water Wheel Company, San Francisco, died in that city Dec. 12, 1926. Prior to his arrival in this country he had been employed by I. M. Voith Company in Germany on hydraulic design. He was 41 years of age and a native of Stuttgart, Germany.

# Meetings

## *Coming Events*

**Pacific Coast Electrical Association**—Engineering Section Meeting. Fairmont Hotel, San Francisco, Jan. 12-14.

Purchasing and Stores Section. Group Meeting in San Diego Consolidated Gas & Electric Corporation Building, San Diego, Calif., Feb. 17-18, 1927.

Annual Convention, Casa del Ray, Santa Cruz, Calif., June 14-18, 1927.

**Northwest Association of Electrical Inspectors**—Annual Convention. Multnomah Hotel, Portland, Ore., Jan. 17-18, 1927.

**California Committee on Relation of Electricity to Agriculture**—San Joaquin Light & Power Building, Fresno, Calif., Jan. 21, 1927.

**Pacific Division, Electrical Supply Jobbers' Association**—Quarterly Meeting. Hotel Del Monte, Del Monte, Calif., Jan. 27-29, 1927.

**National Association of Lighting Equipment Dealers**—Annual Convention in Cleveland, Ohio, Jan. 31-Feb. 5, 1927.

**Northwest Electric Light and Power Association**—Commercial Section. Multnomah Hotel, Portland, Ore., Feb. 7-8, 1927.

Annual Convention, Salt Lake City, Utah, June 21-24, 1927.

**National Electric Light Association**—Commercial National Section. Second Group Meeting. Edgewater Beach Hotel, March 8-11, 1927.

Annual Convention, Atlantic City, N. J., June 4-10, 1927.

## Program Announced for C.R.E.A. Fresno Meeting Jan. 21

"Farm Electrification in California" is the subject of the open meeting to be held Jan. 21 in the auditorium of the San Joaquin Light & Power Corporatoin Building, Fresno, by the California Committee on the Relation of Electricity to Agriculture. The following program has been prepared:

| | |
|---|---|
| 1:00 p.m. | Music. |
| 1:30 p.m. | Call to order.<br>Remarks by chairman. |
| 1:45 p.m. | Electric Farm Sterilizer..Loren Hadley<br>Discussion of Committee's Findings.....B. D. Moses |
| 2:15 p.m. | The Electric Brooder.....E. O. Hussey<br>Discussion of Committee's Findings.....B. D. Moses |
| 2:45 p.m. | Standard Purchase Agreement for Deep Well Pumps..R. M. Schurman<br>Open discussion. |
| 3:15 p.m. | The Electric Walnut Dehydrater.....Charles Hurst<br>Discussion of Committee's Findings.....B. D. Moses |
| 3:45 p.m. | The National Program.....Dr. E. A. White |

The men named are well fitted to discuss their respective topics.

Loren Hadley, a successful dairyman near Modesto, uses electricity for running his milking machine, cooling plant, and electric dairy sterilizer. He has had this sterilizer long enough to know what it will do and what it costs to operate, its weak points and its strong points.

E. O. Hussey, a prominent poultryman of Petaluma, has been a big factor in the development of both the electric incubator and the electric brooder. Not only is Mr. Hussey a poultryman, but he has served his time as an electrician. This double qualification has enabled him to make money raising poultry and to establish a record for the producing of high grade birds.

The pumping problem is such an important one in California and has so many angles that the closest co-operation between the manufacturer, dealer and farmer is essential to ultimate satisfaction. The committee has, through the co-operation of these three parties, been able to draw up a purchase agreement which will be used as a standard in all deep-well pump sales. R. M. Schurman of the Byron Jackson Pump Company will describe this standard agreement.

Charles Hurst of Covina, a walnut grower of experience, operates one of the two successfully operated electrically heated walnut dehydraters in California and will tell the story of his plant.

Dr. E. A. White who, through his position as national director of the Committee on the Relation of Electricity to Agriculture, has made contact with farmers all over the United States, recently represented the United States at a world power conference in Switzerland.

In addition to these talks time will be given for a report by Prof. B. D. Moses, executive secretary, of the findings of the California Committee on the Relation of Electricity to Agriculture on its investigations.

## Annual Kiddies' Party Given by Electrical League

Two beautifully illuminated Christmas trees, a fireplace with exceptionally realistic flames, twinkling lights, colorful balloons—such was the setting that greeted Santa Claus when he arrived at the annual Kiddies' Christmas Party given by the San Francisco Electrical Development League in the ballroom of the Palace Hotel Dec. 20.

Prior to Santa's arrival Arthur Rowe, of Garnett Young & Company, chairman of the day, introduced Eugene McCann, of the Pacific Gas and Electric Company, president of the league, who made a brief speech, introducing the officials of the Salvation Army who had co-operated with the league in providing the children who were the league's guests. A pleasant program followed and then Santa Claus, impersonated by Louis F. Leurey, came to hand to the 100 children the gifts provided by the league. In addition to the gifts each child had been supplied with a new outfit. Fines collected from the members during the year provide the funds for this annual Christmas party.

Much credit is due the committee in charge of the party, consisting of Arthur Rowe, chairman; Clyde L. Chamblin, vice-chairman; C. B. Kenney, Victor Lemoge, Norman Nelson, Arthur Dale, Earl Browne, A. L. Nicoll, Charles Musladin, Fred Todt, Henry Havey, Robert McDonald, Louis F. Leurey, W. B. Francis, Jack Stewart, Guy Barker, Robert St. John and Don C. Ray.

## San Francisco League to Honor J. B. Black and A. E. Wishon

At the luncheon meeting of the San Francisco Electrical Development League on Monday, Jan. 17, J. B. Black and A. E. Wishon will be the guests of honor.

Mr. Black, formerly vice-president and general manager of the Great Western Power Company, recently was promoted to the vice-presidency of the Western Power Corporation, with headquarters in New York, and will leave in the near future to take up his new duties. A. E. Wishon has succeeded to the post formerly occupied by Mr. Black, in addition to retaining his present position as vice-president and general manager of the San Joaquin Light & Power Corporation, Fresno.

## Electrical Jobbers Plan to Meet Jan. 27-29 at Del Monte

The annual meeting of the Pacific division of the Electrical Supply Jobbers Association is to be held at the Hotel Del Monte, Del Monte, Calif., Jan. 27-29, 1927.

The Pacific division is planning to make this the banner meeting of the year and the program committee is arranging a fine program, according to Albert H. Elliot, secretary. An outstanding feature of the meeting will be the presence of Dana T. Ackerly, general counsel of the association, and Franklin Overbagh, general secretary and treasurer.

Mr. Elliot states that he is anxious to have hotel reservations made early and for that reason asks that reservations be sent to him at once.

## Electrical Society's Activities Include Luncheon Club

G. H. Porter, Pacific division manager of the Radio Corporation of America, was the principal speaker at the Dec. 8 meeting of The Sacramento Valley Electrical Society. There were 115 members and friends present to hear Mr. Porter's address on "Recent Development in Radio, Its Use in Marine Service and the Trend Radio Is Taking in Its Growth." The radio dealers had an excellent exhibition of late radio sets at the meeting, and radio movies were a feature.

At this meeting The Sacramento Valley Electrical Society passed a resolution to include the Tuesday Luncheon Club as a branch of its activities. The Tuesday Luncheon Club meets at the Elks Club each Tuesday noon. Any electrical man is welcome, and there are usually twenty-five to thirty men about the board to hear a 15-minute talk and to discuss incidental topics.

**Lighting Equipment Dealers to Hold Convention.**—The tenth annual convention of the National Association of Lighting Equipment Dealers will be held in Cleveland, Ohio, Jan. 31-Feb. 5, during the same week as the lighting equipment exhibition of the Artistic Lighting Equipment Association.

# Manufacturer & Distributor

## Maytag Company of California Holds Sales Conference

More than 300 members of the sales force of the Maytag Company of California, distributors in the northern section of that state of the Maytag washer, gathered in San Francisco Dec. 29-30, 1926, for the annual sales conference and Christmas party of that organization. Practically every one of the 175 cities and towns where dealers or sales branches are maintained was represented.

One of the features of the party was the announcement that three trainloads of Maytag machines, totaling 6,751 washers, the largest shipment ever to be made to one dealer, were enroute to California. Sales plans for 1927 were discussed and quotas announced. The quota for California for 1927 is approximately 48,000 machines and that for the eleven Western states 97,000.

In addition to the sales conference, a number of entertainment features were included on the program. A Christmas party was held at the head offices of the company at 713 Mission Street, visitors were taken on a tour of San Francisco and also were entertained at a dance.

## Electro-Kold Company Plans to Treble Plant Capacity

Plans to treble the present capacity of the Electro-Kold factory in Spokane are being made by the Electro-Kold Corporation, necessitating the increase in capital to $500,000, C. L. Lewis, general manager, has announced. Drawings of the enlarged plant are being prepared.

The company recently appointed the following new distributors of its lines: West Kootenay Power & Light Company of Trail and Rossland, B. C., for the territory in which it operates; the Ice Delivery Company, Portland, which will handle the sale of Electro-Kold refrigerators in conjunction with the Northwestern Electric Company there which has been handling the line for the last two years; and the Kern Valley Electric Company, Bakersfield, Calif., for Kern County.

**Westinghouse Electric & Manufacturing Company,** Seattle, will move its general offices and sales department from their present headquarters at 3451 East Marginal Way to the Lloyd Building, Sixth Avenue and Stewart Street, about Jan. 1, where it has leased the entire eighth floor. The company's service and warehouse departments will continue at the former location on East Marginal Way.

**Utensils Company,** manufacturers of Utenco ironers, has appointed **W. E. Dooley & Company** its representative for the eleven Western states. Mr. Dooley has represented the company in the Northwest for some time, having offices in Seattle at 810 Pine Street, and in Portland at 269 Alder Street. He has announced that he plans to open offices in Oakland and headquarters in Los Angeles, with a warehouse in San Diego. The Easy Housekeeping Shops will continue to distribute the Utenco line in California. The Dooley company also has distributed Woodrow washers in the Northwest and intends to extend its activities with this line to other Western territory.

**W. E. McClurg Company,** 185 First Street, Portland, has been made distributor for Frigidaire electric refrigerators for seven counties in Oregon and two in southern Washington. Formerly the company was a Frigidaire dealer handling the line along with a number of other electric specialties. Under the new arrangement the line of other electric appliances will be handled in a separate store, and by a separate company, the Domestic Electric Company, which, however, is owned by the same interests as the W. E. McClurg Company. **Glen H. Ticer** will manage the refrigeration part of the business, while **R. F. Gray** takes charge of the Domestic Electric Company.

**The Fort Wayne Engineering & Manufacturing Company,** Fort Wayne, Ind., has made its branch at 211 Oak Street, Portland, the headquarters of the Pacific Coast division, with E. O. Arnold as Pacific Coast manager. The company sells electrically driven Paul water systems and pumps. Formerly the Portland office, under Mr. Arnold, handled only the Northwest territory.

**Electrical Specialty Company, Inc.,** San Francisco, on or about Feb. 1, will remove from 75 Fremont Street to the southeast corner of 12th and Folsom Streets where it will occupy half of the building being erected by the **California Electric Supply Company,** which it is understood will occupy the other half.

**The Electric Controller & Manufacturing Company,** Cleveland, has appointed **Farr Electric Service, Inc.,** 226 W. South Temple, Salt Lake City, as its representative.

**V. Howard Wattles,** San Francisco distributor for the **Universal Cooler Corporation, Detroit,** has removed from 907 to 925 Mission Street.

## Facilities of Graybar Company in Los Angeles Increased

In order to take care of the requirements of its customers more adequately the Graybar Electric Company of Los Angeles recently expanded its office and warehouse facilities. New offices have been opened on the third floor of the company's building at East Eighth and Santee Streets, and the entire second floor has been added to the previously occupied space to accommodate warehouse stocks.

A room has been equipped for demonstration of lighting units and so arranged that one end of the room appears to be the front show-window of a store. By means of this "window" suggestions are offered to dealers in and merchandisers of electrical goods to help them in their display problems. The window also is used to demonstrate different lighting intensities and color effects obtainable by proper equipment.

City counter in the Los Angeles branch of the Graybar Electric Company.

**U. S. Electrical Manufacturing Company,** Los Angeles, has let contracts for the erection of a steel fireproof factory building in that city and also has let contracts for the installation and equipment of furnaces, cranes and the like. The building and equipment will be used mostly as a non-ferrous metal foundry and is made necessary by the rapid expansion of the company's business.

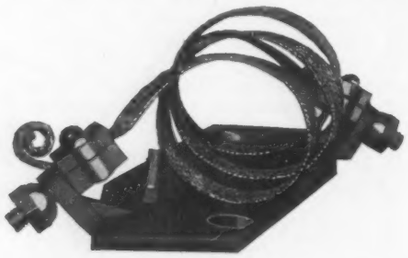
**The New England Wire Company,** Westfield, Mass., has appointed **A. C. Noad,** San Francisco, as its California representative.

**The Emerson Electric Manufacturing Company,** St. Louis, has added the **Electric Corporation** to its distributors in San Francisco and Oakland.

# New Equipment

## Cable Support

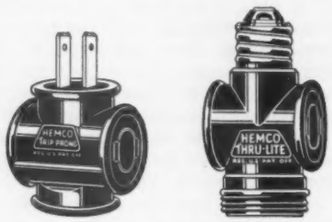
A new cable support applicable to vertical or horizontal runs that will not crush the cable or wear the sheath has been placed on the market by the G&W Electric Specialty Company, 7780 Dante Avenue, Chicago. The support consists of a braided copper ribbon which is wrapped around the cable and clamped at ends to screws attached to a mounting plate. The length of the copper ribbon is varied in the clamps and the



screws draw up the clamps tightly. The support can be used with any diameter of cable and can serve as a grounding clamp as well as a mechanical support. It is simple to install and does not interfere with fireproofing the cable with cement.

## Two Convenient Outlets

George Richards & Company, 557 West Monroe Street, Chicago, has announced the addition of two Hemco convenient outlets to the Hemco plural plug line, Thru-Lite No. 204 and Trip-Prong No. 207. The former is designed with one screw-type threaded outlet permitting the light to hang straight down and two prong-type side outlets. The Thru-Lite is a screw-in type plug and the down outlet is equipped with threads to take Uno or standard shade holders. The side outlets are provided with the Hemco self-locating feature and will fit all standard prong-type attachments.

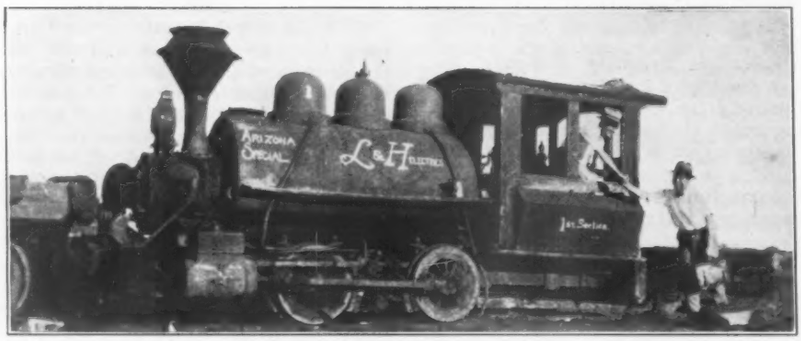



The Trip-Prong plug is designed for prong-type receptacles being similar to the Hemco Tee-Prong plug except that an additional prong type outlet provides three instead of two outlets. The Hemco Trip-Prong plug is designed for all standard prong type receptacles and all prong type attachments. It fits close to the baseboard at the same time permitting the connecting of all types of attachment plugs.

## New Bonnie Dover Iron

A practical and convenient light iron for traveling and for boudoir use, and for light ironing, The Dover Manufacturing Company, Dover, Ohio, announces in introducing this newest member of the Insured No-Burn-Out household iron family. Bonnie Dover weighs 2½ lb., has 2⅝x5 in. ironing surface, is rated at 220 watts, is equipped with Dover Insured No-Burn-Out heating unit, has 6-ft. silk cord with separable connector plug, and is sold complete with leatherette traveling bag which protects both the iron and the clothing—no sharp corners, no bouncing weight, to rip and tear. It is capable of doing even a regular ironing, and is especially adapted for light ironing in those homes where, for lack of facilities, the ordinary laundry is "let out."

## *Range Special, Crew and Passengers, Too*




Bert Kramer and Harry Lippert and the private coach which they chartered to venture forth into the wilds of Arizona seeking the further distribution of L & H electric ranges. Something was said about their "ranging" through the cactus country but the censor crossed that out. Harry W. Lippert is the Pacific Coast representative for L & H ranges, with headquarters in San Francisco. Elbert Kramer, working with Listenwalter & Gough, Inc., of Los Angeles, is the special southern California representative for L & H.

# RECENT PUBLICATIONS

**Circuit Breakers.**—The Westinghouse Electric & Manufacturing Company, East Pittsburgh, recently has released Leaflet 20292 describing its Type MF motor starting oil circuit breakers. Such features as the manual operation, indoor service, non-automatic starting position, and the automatic running position are pointed out, and the application, operation, construction and engineer's specifications are discussed. Two tables, one showing the ratings for motor starting breakers, and the other listing the motor starting breakers of the Type MF complete this leatflet. The company also has released revised Leaflets L 3449-B, L 20135-A and L 20011-A covering Type CA carbon circuit breakers, Types CL and CN carbon circuit-breakers, and Types F-11 and F-22 oil circuit-breakers. The application, construction and operation of these various types of circuit breakers are well discussed in these leaflets. These publications may be obtained at any of the district offices, or from the publicity department at East Pittsburgh.

**Copper-Bearing Steel.**—"Copper-Bearing Steel Resists Corrosion" is the title of a treatise containing facts, figures and photographs showing the marked rust-resisting properties of steel containing a percentage of copper. Copies of this 15-page booklet, No. 679, compiled by Robert D. Snodgrass, consulting engineer, may be obtained by addressing the Truscon Steel Company, Youngstown, Ohio.

**Electric Range.**—Catalog 302, "Crysteel Electric Range", recently published by the Benjamin Electric Manufacturing Company, Chicago, sets forth the superiority of electric cookery, touches briefly on "The Plant Behind the Range", and describes in detail the range models Console and Console Grand, Cabinet and Cabinet Grand and Compact, and also its kitchen heater.

**Engineering Journal.**—The Timken Roller Bearing Company has issued a 109-page loose-leaf publication known as the Timken Engineering Journal. This publication contains much information that should be of service to mechanical and designing engineers. Load calculations, dimension data and other information are included.